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HAVING described in the first two lectures of this course the experimental results obtained in a Research on Alcohol for the Central Control Board (Liquor Traffic), I propose in the next lectures to deal with another social evil—rickets—and to give an account of an experimental investigation made for the Medical Research Committee with the object of finding the essential cause of this disease.

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Nor is this the most serious part of the evil, for the reduced resistance to other diseases of the rachitic child and animal is so marked that the causative factor of rickets may be the secret of immunity and non-immunity to many of the children's diseases which result in the high death-rate associated with urban conditions. It is a striking fact to remember that in the West of Ireland, where the death-rate is only 30 per 1000, rickets is an unknown disease, whereas in poor urban districts of this country where rickets is rife the death-rate in children varies from 100 to 300 per 1000. It is at least suggestive that there may be some relation between rickets and the enormous death-rate of towns, even although the disease in itself does not kill.

The experimental work I wish to describe in these lectures has shown that the rachitic condition need not be at all advanced before the animal's whole behaviour is transformed. It becomes lethargic and is far more liable to be affected by distemper and broncho-pneumonia and is very susceptible to mange. The low resistance of animals which develops as the result of conditions which ultimately lead, under favourable circumstances, to rickets is impressive.

So many of the conclusions regarding the ætiology of rickets have been based on a small number of experiments that it may not be out of place to record that this investigation, undertaken for the Medical Research Committee, has already involved the use of 200 puppies and is still incomplete.

On referring to the literature at the beginning of the research it was soon obvious that the number of hypotheses put forward to explain the ætiology of rickets was legion, while discussion on the subject with those having clinical knowledge only emphasised the completely speculative nature of the ideas held by those whose business it is to deal with the disease.

A considerable number of experiments were first made in an attempt to see whether the ætiology of rickets was to be sought along non-dietetic lines and it was only after failure that the dietetic solution was resorted to. This type of work has continued and has clearly shown that, however important other factors may be, and that there are other factors is not denied, the dietetic problem is the primary key to the situation. In the next lecture some of the more commonly held hypotheses of rickets will be mentioned and discussed in relation to the results obtained in this work.

[1] THE LANCET, 1918, ii., 767.

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Although it is well recognised that different breeds of dogs vary considerably in their susceptibility to rickets, no special type has been used in this work. In some ways this may be disadvantageous; but, on the other hand, to be driven to associate rickets with a particular breed is in itself unsatisfactory and obviously leads the investigator into a blind alley if the ultimate object is to extend the results to children.

The experimental methods used to detect rickets have depended on (1) X ray examination of the bones; (2) calcium estimation of the bones after death; (3) histological preparations of the bones.

The calcium estimation of the bones has been made by Cahen and Hurtley's modification of the oxalate method. In comparative estimations it is useful; but, since it is well recognised that the calcium content of bones varies considerably and independently of the rachitic condition, this method can never be used alone and must always be controlled by histological examination. [In the lecture further details of the methods were described and X ray photographs and histological specimens were demonstrated by means of the epidiascope].

In these lectures I propose to illustrate the normality and degree of rickets obtained by means of the calcium oxide content of the bones. Histological preparations can be seen if desired and also the X ray photographs of many of the dogs. In all cases histological preparations of the bones were made and corresponded, in comparative experiments, with the CaO results given.

[A series of puppies with and without rickets was then shown]. In the puppies exhibited it will be observed that the differences between normal and rachitic puppies are similar to the differences between normal and rachitic children. Like the rachitic child, the puppy shows abnormally large swellings at the epiphyseal ends of the bones; it has a marked rickety rosary, its tendons and ligaments are loose, the bones tend to bend, and thereby help to exaggerate the leg deformity. The amount of deformity often depends on the weight of the animal. Again, the rachitic puppy is lethargic and does not jump about; its power to run, apart from the leg deformity and before this develops, is comparatively limited; there is, in fact, a general loss of tone of the musculature. Similarly, just as the rachitic baby is a good baby and does not cry much, so also the dog in this condition seldom barks or makes the superfluous efforts practised by the normal healthy puppy.

The puppies were started on their diets after leaving the mother, the ages varying between 5 and 8 weeks, the latter being the more usual. They were kept for varying periods according to the type of experiments. In the earlier periods they were usually killed after five to six months, but as the work progressed and the diets became more rachitic this time was considerably shortened.

DETERMINATION OF RACHITIC DIET.

Having determined to see what part diet played as a causative factor in rickets, it was necessary to get a standard diet which would always produce this condition in the experimental animals. The first diet used consisted of whole milk (175 c.cm. per diem) and porridge made up of equal parts oatmeal and rice, together with 1–2 g. NaCl. The oatmeal and rice was later replaced by bread and found to be as effective and easier to use. This second diet was afterwards modified as the experimental results were obtained. The following four diets (Table I.) have therefore been used

TABLE I.—*Rachitic Diets.*

Diet I.	Diet II.	Diet III.	Diet IV.
Whole milk, 175 c.cm.	Whole milk, 175 c.cm.	Separated milk, 175 c.cm.	Separated milk, 250–350 c.cm.
Oatmeal, rice. 1–2 g. NaCl.	Bread ad lib.	Bread (70 per cent. wheaten) ad lib.	Bread (70 per cent. wheaten) ad lib.
		Linseed oil, 10 c.cm.	Linseed oil, 5–15 c.cm.
		Yeast, 10 g.	Yeast, 5–10 g.
		NaCl, 1–2 g.	Orange juice, 3 c.cm.
			NaCl, 1–2 g.

during the course of the work, each one of which is a rachitic diet under laboratory conditions.

The modifications of the diets were carried out in order to: (1) ensure a more rapid development of rickets; (2) to be compatible with better health and better rate of growth. As will be seen later, the better the animal grows on a rachitic diet the more easily is rickets produced or rather the more difficult it is to stop. In the close examination of foodstuffs from this point of view, this is eminently desirable. It is undesirable in such work to have animals in a semi-starved condition involving a high mortality due to bronchopneumonia and marasmus. Puppies, like all young animals, tend to develop these diseases unless the diet is well chosen.

RESULTS OF ADDITION OF VARIOUS SUBSTANCES TO RACHITIC DIET.

Having obtained diets which normally produce rickets, various substances were added and the effect on the development of the disease noted. In the following tables the quantity of calcium estimated as CaO present in the shaft of the femurs of the animals fed on these diets is given. In the last column the histological findings of the bones examined are added.

TABLE II.—*Diet I. plus more Whole Milk.*

No. of experiment	Diet.	Duration. Months.	Initial weight.	Final weight.	Gain.	CaO in femur shaft. Dry.	CaO in femur shaft. Fresh.	Histology results.
			g.	g.	g.	%	%	
43	Diet I.	4	905	2187	1282	23·5	—	Rickets.
52	,,	8	1745	5200	3455	23 5	—	,,
53	,,	7½	1765	4245	2480	22·5	—	,,
56	+ 325 c.cm. milk.	5	1810	5280	3470	31·8	—	Normal.
57	+ 325 ,, ,,	5	1330	4980	3650	29 2	—	,,

TABLE III.—*Diet II. plus Meat and Meat Extracts.*

73	Diet II.	4	3960	6110	2160	20 7	—	Rickets.
96	+ dog biscuit.	5½	1905	4200	2295	22·1	9·38	,,
97	,,	5½	1375	3295	1920	16·03	5·90	,,
68	+ Wat. ext. of meat.	4	4000	6540	2540	32 8	—	Normal.
69	+ Meat protein.	5	4840	7630	2790	21·7	—	Rickets.
70	+ 80% alc. ext. of meat.	5	4577	6695	2118	30·2	—	Normal.
93	+ 10 g. meat.	5½	1220	7450	6230	29·53	15·43	,,

TABLE IV.—*Diet II. plus Yeast and Malt Extract.*

96	Diet II.	5½	1905	4200	2295	16·03	5·90	Rickets.
94	+ 10-20 g. yeast.	5½	1590	5000	3410	23·05	11·33	,,
95	,,	6	2410	6000	3590	18·02	9·75	,,
75	+ Malt ext.	4	3350	5240	1890	31·2	—	Normal.
86	,,	7	810	4500	2690	18·68	12·64	Slight rickets.

TABLE V.—*Diet II. plus Different Fats.*

73	Diet II.	4	3950	6110	2160	20·7	—	Rickets.
71	+ 10-20 g. butter.	6	215	6930	4780	29·04	15·5	Normal.
76	+ 10 c.cm. cod-liver oil.	9	2715	9000	6285	27·41	16·82	,,
80	+ 10 c.cm. linseed oil.	5	2535	6115	3580	16·22	8·08	Rickets.
81	,, ,,	5	2875	5320	2445	13·33	6·08	,,
109	+ 10 c.cm. peanut.	5½				26·35	15 60	Normal.
102	+ Wat. ext. of butter.	6				16·64	6·95	Rickets.

TABLE VI.—*Diet III. with Various Fats instead of Linseed Oil.*

138	Diet III.	3	1755	2685	930	16·58	7·14	Rickets.
140	,,	3	1060	2100	940	20·46	7·36	,,
		Weeks.						
148	With cod-liver oil.	17	1735	3890	2155	27·78	16 51	Normal.
143	With butter.	17	1920	3765	1845	28 95	15·89	,,
147	With olive oil.	17	1445	2625	1180	23·79	13 22	Slight rickets.
163	With peanut.	17	2350	4020	1670	18·88	13·81	,,
145	Diet III.	17	1830	3605	1775	21 60	12·35	Rickets.

TABLE VII.—*Diet III. Plus Meat and Meat Extracts.*

141	Diet III. + 5 g. meat.	17	2490	5820	3330	17 48	7·19	Rickets.
143	+ 20 g. meat.	17	2890	4400	1510	17·88	9·48	,,
144	+ 50 g. meat.	17	3630	8825	5135	15·74	10·72	,,
160	+ Watery ext. of 50 g. meat.	12	2005	3825	1820	13·88	7·20	,,

Using Diet I., we see in Table II. that increasing the whole milk from 175 to 500 c.cm. per diem prevents the development of rickets. In other tables are experimental results obtained by means of Diet II.

On Diet II. not only does meat but both the watery and alcoholic (80 per cent.) extracts have an inhibitory effect. (Table III.) On the other hand, the protein residue after loss of extractives allows rickets to develop.

Table IV. shows the effect of adding malt extract and yeast to Diet II. Yeast therefore has no protective influence. Malt extract has some inhibitory action and delays the onset of rickets when added to Diet II.

A large number of experiments were now made in which the effect of different fats were analysed. A few of the results are given in Table V. Many other fats and margarines, animal and vegetable, were tested, but almost uniformly they prevented rickets, the only undoubted exception being linseed oil. The results allowed the evolution of Diet III., in which separated milk was used in order to eliminate the milk fat, whose place was taken by linseed oil. Yeast was also added to the diet. Using this diet, a closer analysis of the effect of different fats was possible. (Table VI.) Now we see from the calcium results, which are an accurate indication in this case of the rachitic picture, that the value of the oils is graded, cod-liver oil being the best and linseed oil the worst; the vegetable oils, olive and arachis, are not so good as butter.

It was found that adding orange juice (¼ orange per diem) did not prevent rickets. Further, that the addition of 5 g. calcium phosphate, or doubling the separated milk and so increasing the calcium intake in this form was without preventive action on the development of the disease. In Diet IV., therefore, the separated milk was doubled and 3 c.cm. orange juice per diem also given. On Diet IV. the growth and general health of the puppies seemed better, and both these factors are of importance in such an investigation. Another improvement was to substitute 5 g. of yeast by a small quantity of a commercial yeast extract (3–4 g. per diem).

On Diets III. and IV. it was found that small quantities of meat and meat extract did not prevent rickets developing, as they have previously been observed to do when used in addition to Diet II. Table VII. illustrates some of these results. Although meat did not prevent rickets, a closer analysis of these and other results showed that it did have some inhibitory effect. It will be noticed, for instance, that the CaO present in the fresh femur shaft of Exp. 144, where 50 g. of meat was eaten, is higher than in Exp. 141, where only 5 g. of meat was added to Diet III. The action of small quantities of meat (10 g. per diem) is best seen when given with quantities or types of fat otherwise ineffective in preventing rickets. It will often be seen to keep the growth normal, whereas in its absence rickets would develop. This, no doubt, explains the experimental results obtained when meat was added to Diet II. The small amount of butter—i.e., about 5 to 7 g.—in the milk of this diet had its anti-rachitic effect enhanced by the small amount of meat.

On Diet III. it was seen that the action of the fats as regards rickets was graded, the animal fats being more anti-rachitic than the vegetable fats and the latter differing from each other greatly. The best of the vegetable fats in preventing rickets are arachis (peanut) and olive oils. The worst of those examined include linseed, cottonseed, babassu oils, a hydrogenated fat, and cocoanut oil. These oils were all refined.

IMPORTANCE OF DIETETIC FACTOR.

The above dietetic results indicate that diet plays an important part in the etiology of rickets. An examination of the results obtained suggests that rickets is a deficiency disease which develops in consequence of the absence of some accessory food factor or factors.

Of the three factors known, fat-soluble A, water-soluble B, and antiscorbutic, two of these can be at once excluded. Yeast has no preventive influence on the development of the disease, and in consequence water-soluble B cannot be considered as of importance. Again, orange juice, sufficient to exclude any possibility of scurvy when considered with the rest of the diet, did not inhibit the disease, and this therefore allows the exclusion of the antiscorbutic factor. On the other hand, the anti-rachitic substances for the most part have been found, so far as the rickets experiments have gone, to be similar to those in which, according to the

experiments on growth, of McCollum, Osborne, Mendel, and others, fat-soluble A is present. It therefore seems probable that the cause of rickets is a diminished intake of an anti-rachitic factor which is either fat-soluble A, or has a somewhat similar distribution to fat-soluble A. The facts are not all in favour of this hypothesis as it stands, and these will be discussed in the next lecture.

Another point which has been definitely established in the course of this work is that rickets develops much more readily in the fast-growing puppies than in those growing slowly. As might be expected, therefore, the prevention of rickets in a rapidly growing dog requires more anti-rachitic factor to keep the growth straight. This point is brought out in the case of two puppies of the same litter (Exps. 173 and 174) fed on the same diets (Diet IV. + 10 g. meat). The larger puppy grew much more rapidly than the other. Puppy (K) 173 increased from 1130 to 2240 g.—i.e., a gain of 1110 g. in 10 weeks, whilst L (Exp. 174) increased in weight from 1800 to 3970 g.—i.e., a gain of 2170 g. in the same period. It will be seen in the X ray photographs that rickets is more strongly developed in the faster growing dog, although both are rachitic, the diets being deficient in the anti-rachitic factor. Puppies of the same litter which received 10 g. of butter in addition to the diets received by Nos. 173 and 174 were normal.

LECTURE II.

We saw in the last lecture the manner in which the experiments were carried out, together with some of the main results. Substances which had no preventive action on the development of rickets included separated milk, bread, the protein of meat, yeast, linseed and babassu oils, and hydrogenated fat. Substances with well-marked preventive action included cod-liver oil, butter, and suet. Then there were other substances whose preventive action was definite but not so great as that possessed by the above animal fats. In this group were meat, meat extract, malt extract, lard, arachis and olive oils.

THE PART PLAYED BY FAT-SOLUBLE A.

The results seemed to favour the hypothesis that experimental rickets can be prevented by diets containing an abundance of anti-rachitic factor and that the anti-rachitic factor and fat-soluble A have somewhat similar distributions. There are, however, several points which are not in harmony with the ordinarily accepted views about fat-soluble A. Three of these will be discussed.

Relation of Rapidity of Growth to Development of Rickets.

Rickets develops best in rapidly growing animals, this fact being in harmony with the clinical observation that large and rapidly growing children most often suffer from rickets, whereas marasmic children generally escape. It is, therefore, difficult at first sight to associate a disease of rapid growth with a deficiency of fat-soluble A which is, according to accepted teaching, necessary for growth. For it has been shown, in the case of rats by McCollum, that both fat-soluble A and water-soluble B are essential for growth. Before fat-soluble A and the anti-rachitic factor can be held to be the same thing, further consideration is necessary.

The first point to emphasise is that some of the fastest growing dogs in these experiments have had very little fat-soluble A in their diet. Here are two examples:—

	Exp. 144.	Exp. 175.
Diet III. + 50 g. of meat per diem ...	—	—
Initial weight	3690 g.	—
Increase in weight in 13 weeks	5135 g.	4585 g.
Rickets	Marked	Very slight.

If the milk were completely separated, Diet III. ought to have contained no fat-soluble A. Meat is reputed to contain little or no fat-soluble A when devoid of fat. The fat was dissected off as completely as possible, but there was undoubtedly a little not removed.

The following experiments show that when only 10 or 5 g. of meat were added, or even without any meat, good growth was obtained.

—	Exp. 176	Exp. 141.	Exp. 186.	Exp. 185.	Exp. 190.
Diet	D. III. + 10 g. meat.	D. III. + 5 g. meat.	D. IV. (Linseed oil).	D. IV. (Olive for linseed).	D. IV. (Cod-liver for linseed).
Increase in weight ...	2930 g. in 10 weeks.	2720 g. in 10 weeks.	1200 g. in 5 weeks.	1100 g. in 5 weeks.	1525 g. in 5 weeks.
Condition ...	Rickets.	Rickets.	Rickets.	?	Normal.

In experiments 186 and 185 no meat was present in the diet and yet the puppies grew considerably, though, it is true, not to quite the extent of Exp. 190 where the fat eaten was cod-liver oil, which is known to contain fat-soluble A.

These results cannot fail to raise the question as to the necessity of fat-soluble A being present in the diet before growth is possible. As the experiments were not carried out from the point of view under discussion I do not naturally deny that fat-soluble A is necessary for growth, more especially as the separation of the milk in the diets was not always perfect. I think, however, that it can be definitely stated that the amount of growth a puppy experiences has no relation to the amount of fat-soluble A in the diet, although a small minimum amount may be necessary. It is, of course, possible that puppies can make use of considerable stores of fat-soluble A in their own tissues, which will allow growth for some months even in the circumstances of deficient fat-soluble A in the diet.

It has, however, been already pointed out in this work that large and rapidly growing puppies require more anti-rachitic factor to prevent the development of rickets. If, therefore, fat-soluble A and the anti-rachitic factor are identical the presumption is that the function of fat-soluble A in the diet of puppies is not so much to ensure growth as to promote correct growth; in other words, to keep the growth straight: and the greater the amount of growth in any period the greater is the amount of fat-soluble A necessary to keep it along normal lines. If this view is correct, then it can hardly be claimed that fat-soluble A is in any different category from the point of view of growth than the antiscorbutic factor, for, even in the absence of this latter, the rate of growth diminishes and there is often rapid loss of weight.

The Action of Meat and Meat Extracts.

The second difficulty involved in considering the anti-rachitic factor and fat-soluble A as identical is the part which meat and meat extracts play in the development of rickets. It has been seen that, although when added to Diet II. these substances prevent rickets, in the case of Diet III. rickets develop. Yet even in the Diet III. and IV. experiments, the action of meat is undoubtedly inhibitory in nature and, when 50 g. of meat are given, will almost prevent rickets in a small puppy. Just as in the last section it was seen that meat has a stimulating action on the growth of puppies far beyond its fat-soluble A content, so also it appears now that the anti-rachitic action of meat is in a greater measure than any fat-soluble A it is reputed to contain. Either we must recognise that meat contains more fat-soluble A than the rat-feeding experiments have led us to believe or we must endeavour to find another explanation of the action of meat in rickets. It seems to me that another explanation is possible.

It is known that meat has one action on metabolism, which is more strongly developed than in any other foodstuff. This is its specific dynamic action or power to stimulate the total chemical exchanges taking place in the body. In having this stimulating action it will increase the effectiveness of any fat-soluble A in the diet and will tend to prevent the storing up and deposition of this substance in the subcutaneous and other tissues. Again, any fat-soluble A in the tissues will be more readily mobilised under the stimulating influence of the metabolising meat. It is probable that the anti-rachitic action of meat may therefore be due more to its making the fires burn more brightly, and thereby increasing the effectiveness of any fat-soluble A present in the body, rather than to the fat-soluble A it possesses in itself. If this explanation of the action of meat be true, then it is still possible to regard fat-soluble A and the anti-rachitic factor as identical.

The Different Effects of Vegetable Oils.

The third difficulty, which is probably of less importance than the two foregoing, is the widely different action of the vegetable fats as regards the development of rickets. In the growth experiments of previous workers all the vegetable fats are described as deficient in fat-soluble A, and the impression is received that there is but little difference

between them. On the other hand, their anti-rachitic influence varies considerably, being obviously present in arachis and olive oils and absent in linseed and babassu oils. Other vegetable oils like cocoanut and cottonseed occupy an intermediate position. If the anti-rachitic factor is fat-soluble A, then it must be accepted that the type of experiment described in this work is a more delicate test for fat-soluble A than previous work involving the growth of rats.

The difficulties have now been stated and briefly discussed. On the whole, it will probably be agreed that they are not formidable, and not more than might be expected under the circumstances.

Since this is probably the first research on growth factors carried out on dogs, it might be expected that the facts would not be identical with those met with in rats. Again, a superficial survey of the question suggests that particular difficulties would be met with. For we know something of the part played by accessory food factors in such deficiency diseases as beri-beri and scurvy, and we know something of the part played by these substances in growth, but in the case of rickets we are apparently up against a combination of both a deficiency disease and growth, rickets, in fact, being a disease accompanying growth. Whether the anti-rachitic factor is fat-soluble A as previously understood is therefore undecided, but, on the whole, these substances appear to be identical. It is at least certain that the distribution of the two substances is remarkably similar.

REVIEW OF SOME EARLIER HYPOTHESES AS TO ÆTIOLOGY.

It is interesting to see how the facts brought out in this work fit in with some of the most commonly held hypotheses of the ætiology of rickets. I think it will be agreed that the accessory factor hypothesis allows many of these older hypotheses to be so focussed that a common and simple image is visible.

Dietetic Hypothesis.

Rickets as a disease due to deficiency of fat.—The work of Bland-Sutton on the lion cubs at the Zoological Gardens has left its impress on English thought as regards rickets and, together with the acknowledged efficacious results that follow the treatment of rachitic children with cod-liver oil and other fats, has brought about a general acceptance of the view that rickets is due to deficient fat in the diet. The results recorded here make it clear why this view is so commonly held, but demonstrate that the efficacy of the treatment—curative or preventive (as regards the latter the work of Hess and Unger is of particular interest)—does not depend on fat *per se*, but rather on the type of fat, and whether it contains an abundance of the anti-rachitic factor, animal fats being superior to vegetable fats.

Excess of carbohydrate in the diet.—When a diet contains excess of carbohydrate it means that it is made up largely of cereals. Now cereals, and more particularly cereals like wheat, rice, and oats, which have undergone transformation in the course of manufacturing processes, are most deficient in anti-rachitic factor. A diet, therefore, of such substances is quite unbalanced and most effective in producing rickets.

Deficiency of fat and excess of carbohydrate.—This condition comprises the first two hypotheses, and what is said about them can be extended with further emphasis to this suggestion. Such a combination would most certainly involve a deficiency of anti-rachitic factor.

Deficiency of calcium salts in the diet.—It has been seen previously that abundance of calcium in the diet, either in the form found in separated milk or in calcium phosphate, will not prevent rickets when the diet is deficient in anti-rachitic factor. Similarly, it has been found by some workers that a diet deficient only in calcium salts, but otherwise adequate, will not produce rickets. It is, however, more than probable that a deficient calcium intake associated with deficient anti-rachitic factor will bring about a more acute production of rickets, and must always be an adjuvant factor to be considered in the ætiology of rickets.

The "Domestication" Theory of Rickets.

Von Hansemann's "theory of domestication" includes in a comprehensive way all the unhygienic conditions associated with life in civilised and more particularly in crowded communities. The difficulty is that we have not yet complete knowledge as to what is unhygienic in the environment of civilisation. There is something subtle about the problem, and many of the factors about which we hear so much may be of little or no importance when compared with factors about which nothing is at present known. Modern mode of life, and particularly of urban life, has involved two main changes in environment; (1) diet; (2) greater confinement and lack of fresh air. My experimental results have indicated that the dietetic changes are of prime importance in bringing about the widespread development of rickets, although, according to the researches here described, diet must be considered from an entirely new point of view.

Effects of Confinement.

At this point I wish to consider the part played by confinement in the ætiology of rickets, more particularly because in recent years the experimental work of Findlay has indicated that it may be of importance. Findlay's work involved the use of 12 dogs fed on a diet of oatmeal porridge and milk (amount not stated). It will be seen that this diet is similar to Diet I. used in my experiments, a diet which normally produced rickets in experimental puppies. (Diet I. was composed of whole milk 175 c.cm., oatmeal and rice, and 1–2 g. NaCl.) On this diet, then, the confined dogs were rachitic, the dogs obtaining exercise normal.

It seems to me that, working with such a diet, which approaches a rachitic diet, experimental results can only show that want of exercise is a factor in the production of rickets, but cannot be regarded as proof that it is the primary factor. Before the acceptance of this hypothesis is possible it must be shown that confinement on an adequate diet—that is to say, one compatible with the best health, always brings about rickets. Certainly the porridge and milk diet, unless the milk is large, cannot be considered healthy (in three months two of Findlay's confined puppies died of broncho-pneumonia and one of marasmus).

The beneficial effect of freedom in the case of dogs on an inadequate diet is what might be expected and is not, in my opinion, discordant with a dietetic hypothesis. The constant movement must raise the whole metabolic changes in the body and, in the first place, prevent or delay the deposition of fat with its accessory food factor in the subcutaneous and other depôts and, secondly, bring into activity any anti-rachitic factor normally stored away and ineffective. Exercise, in other words, must give a greater opportunity to any anti-rachitic factor in the food or tissues of the animal to play its part in the animal economy. In addition to this, exercise or the possibility of exercise undoubtedly improves the animal's health, and it is almost certain that a rachitic diet is more effective in producing rickets when the animal's health is subnormal as it may be following continuous confinement.

A strongly rachitic diet after a few weeks has a decided effect on the animal's activity, and it is difficult to give any real exercise to a puppy that is rachitic even though the bony and ligamentous changes may not be the disability which limits the movement. On the other hand, confinement generally fails to prevent a well-fed puppy from taking abundant exercise. The analogy can probably be applied with greater force to children; a well-fed child between 9 months and 2 years can get exercise whatever its environment, whilst a child with active rickets will show the same lethargy in a slum or the middle of Hyde Park. The activity of an infant is not to be measured by the amount of running it performs, but by its small movements.

My own experience is that confinement will not produce any symptoms of rickets in adequately fed puppies.

Results of Investigation in Glasgow.

It may not be out of place to refer to the recent statistical account of an investigation made by Miss Ferguson on rickets, more particularly in Glasgow. The results of this work are against the hypothesis that rickets is a dietetic deficiency disease and the general conclusion, although undetermined in a definite sense, is that the factors favouring the development of rickets are: (1) insufficient space in houses; (2) confinement in such houses; (3) imperfect parental care. No support is given to the dietetic hypothesis. It is interesting, however, to examine some of the results relating to family budgets in this paper.

Below are given the tables relating to the "average consumption of food" (p. 68) in rachitic and non-rachitic families.

Now let us consider the tables, obtained by Miss Ferguson, in the light of the accessory factor hypothesis. First, what are the substances in the diets which allow rickets—i.e., are

Average Consumption per "Man" per Day of the Chief Articles of Diet in Grammes.

(1) Rachitic families. (2) Non-rachitic families.

—	(1)	(2)	—	(1)	(2)
Flour	387·9	376·2	Other cereals	15·6	26·9
Potatoes	291·0	236·8	Margarine or butter	32·6	38·5
Milk	256·0	309·0	Fish	15·7	35·9
Meat	89·1	92·6	Eggs	15·1	30·4
Sugar...	91·4	84·0	Cheese...	6·7	8·2
Oatmeal	40·4	36·0			

deficient in anti-rachitic factor? The answer is flour, potatoes, sugar, oatmeal, and other cereals. On the other hand, what are the anti-rachitic substances? Milk, meat, margarine or butter, fish, eggs, and cheese. The following table shows how the diets of rachitic and non-rachitic families differ as regards these articles. The rachitic families received :—

Substances allowing rickets.	Substances delaying or preventing rickets.
11·7 g. more flour.	53·0 g. less milk.
54·2 g. ,, potatoes.	3·5 g. ,, meat.
7·4 g. ,, sugar.	5·9 g. ,, margarine or butter.
4·4 g. ,, oatmeal.	20·2 g. ,, fish.
11·3 g. less other cereals.	15·3 g. ,, eggs.
	1·5 g. ,, cheese.

Is it a coincidence that except as regards "other cereals" there is an increase in the diet of the rachitic families of the substances allowing rickets and, what is of greater importance, a decreased amount of substances having an anti-rachitic influence? It will, of course, be answered that the differences are too small in amount to be regarded as of importance. As a matter of fact, a moment's consideration will show that the real state of affairs is probably more emphatic than the figures represent. The outstanding fact brought out in Miss Ferguson's paper is that rickets is often associated with the more careless parents. It is clear that the infants below 2 years old will not get from such parents their proper share of the "good things" of the articles of the above budgets. The good things happen to be those substances containing the anti-rachitic factor. The children will undoubtedly be put off with an undue proportion of bread and the commoner foodstuffs which produce rickets.

It is improbable, however, that family budgets will ever decide the course of rickets in individual cases, but sufficient has been said to make it clear that in the appraisement and criticism of this statistical work too little attention has been given to this side of the problem and too much to the exercise and confinement factors.

GENERAL CONSIDERATION OF RICKETS AS A DEFICIENCY DISEASE.

It will be noticed that, although rickets has been interpreted on the basis of my experimental results as primarily a deficiency disease of a dietetic nature, this has not prevented other conditions from receiving attention and being considered as of some importance. A knowledge of general metabolism would not allow the exclusion of other factors; for dietetic problems must always be regarded as a whole, and the idea that accessory food factors can be considered separate and apart from other elements of the diet and from the general metabolism is unsound.

An adequate diet is itself a unit, and its soundness, to a large extent, consists of the mutual assistance and interplay in the metabolic changes the elements experience in the body. The absence of, or deficiency in, one element means the ineffectiveness of another. For instance, the absence of carbohydrate involves a defective oxidation of fat, and probably an inefficient protein metabolism. Similarly, it is possible to imagine an abundance of accessory food factors in the diet which may, however, be ineffective because of some wrong balance in the energy-bearing materials. The same argument applies where the metabolism varies for reasons other than diet.

These few words are all the more necessary because recent work on accessory food factors has appeared too self-contained and, if persisted in, may be responsible for a period of disbelief in their existence with subsequent lack of progress in the study of a subject which is obviously of prime importance both from the academic and practical points of view.

The Dietetic Problem.

There is some danger in applying laboratory results to a clinical condition, more especially when the results are new and for the most part uncontrolled by clinical observation. But some remarks are necessary in this connexion, for, if experimental research can point to the real cause of a disease, then not only is the curative treatment controlled, but, what is of much greater importance in the case of rickets, it ought to be possible to indicate why rickets is widespread and to direct knowledge along preventive lines.

It appears, then, from this work that the foodstuffs of an infant ought to contain a maximum amount of anti-rachitic factor. Since, further, the dietetic problem is one of balance, foodstuffs which contain no anti-rachitic factor cannot be considered as neutral, but as positively rickets-producing, for the more of them that is eaten the greater is the necessity for foods containing the factor. Since there is a limit to what a child can eat, the inference is obvious. It is probable that bread is the worst offender, and to allow bread to form too large a part of an infant's dietary seems to me to be courting disaster. The same statement may apply to other cereals, but this has not been worked out to any extent.

Another point of importance is the type and amount of fat eaten by children. Since the above remark as to the limited amount of food a child can eat applies with even greater force to fat, it is necessary to give children the best fat from the point of view under consideration. They should therefore not be given vegetable margarines or any other vegetable fat. The natural fat for a child is the fat of milk, and to give it a vegetable fat not only limits the amount of butter it can eat, even if procurable, but also weighs down the diet in the rachitic direction. If additional fat is given to that normally eaten, then cod-liver oil is the best.

Milk as an Anti-rachitic Factor.

Undoubtedly milk ought to remain the staple article of diet not only until weaning, but for some years after this time. Milk is undoubtedly better than the corresponding amount of butter. Under normal circumstances the child would then be assured of a good supply of anti-rachitic factor. Not, however, under all circumstances is this certain, for the work of McCollum, Simmonds, and Pitz has shown that before an abundance of fat-soluble A appears in the milk the mother must have a good supply of this substance in her food. This means that the animal's power of synthesising these accessory food factors is small or absent. Grass is a good source of fat-soluble A for the cow, and a well-fed cow, from this point of view, will give good milk. The mother drinks this milk, and the accessory food factors are passed on to her mammary glands, thereby allowing the breast-fed child to get an adequate supply.

The problem therefore reverts largely to the feeding of the cow, and it is probable that the cow fed in the stall largely on vegetable oil-cakes will give a milk deficient in accessory food factors. If, therefore, a nursing mother's diet is deficient in the anti-rachitic factor, it is easy to understand how the breast-fed child develops rickets, for it is probable that the same argument applies even if it should subsequently prove that the anti-rachitic factor and fat-soluble A are not identical. Recently Hess and Unger have shown that the diet of the negro women in New York, whose breast-fed children are nearly always rachitic, is very often deficient in fat, the amount of milk they drink being small. These suggestions may also explain why rickets develops more commonly in the winter months, when the cow's diet is more artificial.

Other Foodstuffs.

As for the action of other foodstuffs, it has been pointed out that meat has an anti-rachitic effect to some extent and even in small quantities (10 g. a day to a puppy) will render a slightly rachitic diet safe, probably by making the anti-rachitic factor in the diet more effective. Vegetable juices seemed also to have some inhibitory action on the development of rickets.

In these days, when proprietary articles are so commonly used as foods for children, it is of vital importance that these substances should be judged by their accessory food-factor content in addition to the ordinary analysis as to any protein, fat, carbohydrate, and salts they may contain.

Synthetic milks, especially such as contain linseed and other vegetable oils, ought to be discountenanced as foodstuffs unless it can be satisfactorily shown that their accessory food factors are abundant. Similarly, the dispensing of vegetable oils instead of cod-liver oil to children, often rachitic when the oil is given, may do much more harm than good. This is most certainly the case, as I pointed out at the Physiological Society's meeting in January, 1918, when the type of Marylebone cream containing linseed oil is given. If children are to have the best chance for a healthy existence, until further work extends or modifies my experimental results, it would be safer to exclude all vegetable oils from their dietary.

Finally, it is necessary to point out that this experimental work is far from complete, and no doubt in the near future much further knowledge will be forthcoming. The subject is of great importance and will not end with rickets. For instance, the researches of my wife on the action of accessory food factors on the development of teeth show how necessary it is that throughout the whole period of calcification of the teeth—i.e., up to the eighteenth year—there should be abundance of anti-rachitic factor in the diet, and a deficiency at any period will be reflected in the calcification and probable uneven arrangement of the teeth. Still further points of practical interest will come to light soon.

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CHEMOTHERAPY IN CUTANEOUS TUBERCULOSIS,

WITH REPORT ON TWO CASES TREATED WITH ELLIS'S PICRIC-BRASS PASTE.

BY H. J. GAUVAIN, M.A., M.D., M.CH. CANTAB.,

MEDICAL SUPERINTENDENT, LORD MAYOR TRELOAR CRIPPLES' HOSPITAL AND COLLEGE, ALTON.

BY the generosity of Dr. H. A. Ellis I have been permitted to collaborate with him and make use of the brass preparations he has introduced and employed with marked success in the treatment of cutaneous and other forms of tuberculosis. He has further placed me in his debt by very kindly sending an advance copy of his contribution to this number of THE LANCET. In it I note he apologises for what he describes as empirical deduction. I venture to think that he is to be congratulated on a research which may be of far-reaching importance, and which will remain an example of persevering investigation calling for the highest attributes of the scientific searcher for the truth.

Work of Continental Investigators.

Dr. Ellis was not aware that his researches have been to some extent forestalled by lengthy investigation on the continent, particularly in Germany, following, I believe, French inspiration, and stimulated later by the brilliant results attained by Ehrlich and his school. In France in 1894 two preparations of copper had been successfully used by Luton, father and son, cuprum phosphoricum insoluble in water, and cuprum aceticum soluble in water.[1]

Of the German investigators, Finkler and von Linden working at Bonn in collaboration used with some success on tuberculous guinea-pigs preparations belonging to two dissimilar groups; on the one hand, the chlorine—and iodine—hydrogen salts of methylene blue, and on the other, certain copper salts, especially copper chloride. To Professor Meissen was entrusted the task of testing these preparations on lung tuberculosis, to Strauss that of testing them on lupus and other external tuberculous affections.[2]

Von Linden demonstrated that while the living tubercle bacillus takes up other colouring matters slowly, it quickly stains with the two salts of methylene blue, to which stains it is tenacious, and though not slain loses its faculty of development.

Strauss showed that various copper compounds, notably copper-lecithin compounds,[3] are capable in a 1 per cent. solution of inhibiting the tubercle bacillus after five hours and killing it after 24 hours. Rubbed up with a lecithin soluble copper salt the tubercle bacilli became green but retain their specific colouring power. After one hour they show morphological changes. Later they lose their colouring faculty and show brown granules in their interior and after several hours further disintegrate.

Further investigation showed that by injection into guinea-pigs infected with tuberculosis, both the methylene blue and the copper salts could be demonstrated in the tubercle bacilli.

These researches are of fundamental importance and represent a great advance in the chemotherapy of tuberculosis.

Lecutyl and Other Copper Compounds.

Without detailing the laborious experiments of the German investigators, it may be stated that their experiments led to the introduction of a compound composed of copper, lecithin, and cinnamic acid, to which was given the name lecutyl.[4] Following encouraging animal experiments with controls, this and other copper compounds have been used, in some cases with notable success. The preparations have been administered by mouth, subcutaneously, intravenously, intramuscularly, and as local applications.

As to the toxicity of copper, Strauss reports as follows:—

"The harmlessness of copper may be demonstrated on the basis of experiments carried out both in animals and the human subject as recorded in literature when the doses as applied in the case of man remain below the level of toxic action. Professor Meissen has recently gone into this question thoroughly, and it should be sufficient to direct attention to this exhaustive work. In spite of that we should not omit to mention that experience hitherto acquired in the case of more than 150 persons affected with external tuberculosis has strengthened our belief in the innocuousness of copper. An objectively demonstrable nephritis which was soonest to have been expected has never made its appearance. It must be emphasised how well the human organism tolerates small doses even when they are introduced for an uninterruptedly long period. Injurious secondary effects might arise through coagulation of albumin similar to those that are to be expected from the action of mercury. These might set up resistance reactions in the excretory organs; just as with mercury, stomatitis, nephritis, and enteritis are experienced, so with copper which is most likely stored up in the liver, hepatitis and after that nephritis might be expected. These phenomena have not been observed to follow doses which have been given in the case of man. Reactions affecting the gastro-intestinal tract have now and then been observed, such as eructations and in rare cases vomiting. The stomach protects itself against the precipitation of albumin and then requires an intermission of the treatment. What one has to fear, especially in the case of intravenous administration, are attacks of acute rather than of chronic intoxication."

Strauss's last work, to which I have had access, appeared in 1915.[5] In it he describes the specific action of lecutyl on tuberculous tissue as follows:—

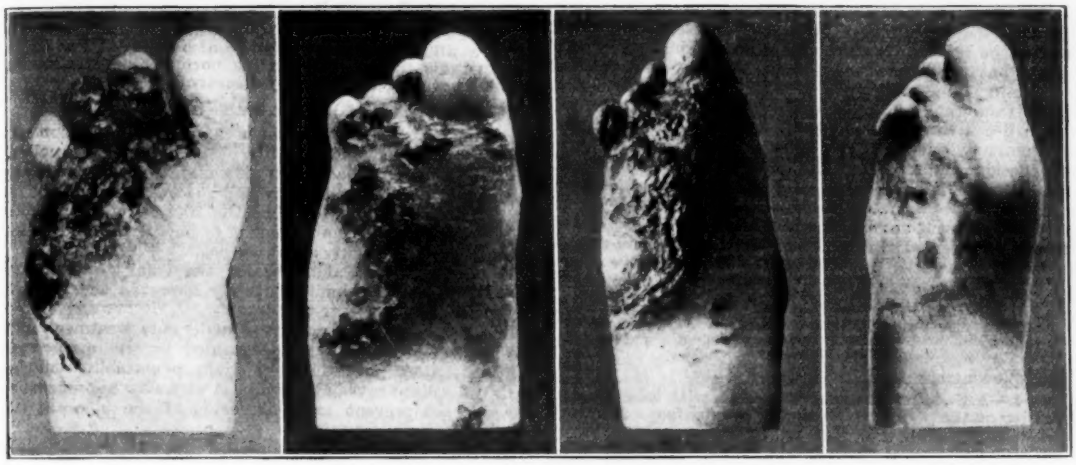
"In lupus only the nodules and infiltrations are destroyed. In the very first days of treatment they are laid bare, *like a sieve*, and later go on to atrophy when all tuberculous tissue has been destroyed."

This article is accompanied by a series of striking illustrations of the end-results of treatment as applied to the face.

The great objection to the lecutyl treatment is that it is very painful. Administration of lecutyl by a painless method has so far been impossible of attainment.

In addition to the lecutyl treatment Strauss advocated the intravenous injection of diamide glycocal copper, employing a solution which he calls "H." With faultless technique it is claimed that this method will become completely painless. Solution H contains 0·01 pure Cu per c.mm. From 0·5 to 5 c.cm. may be injected twice a week, slowly increasing from 0·5 c.cm.; half doses in the case of children. He states that in general 1 mg. Cu per kilo body-weight is to be reckoned an innocuous dose. In combined general treatment only small doses should be given intravenously in order to avoid cumulative effects.

This work apparently attracted little attention in England, but shortly before the war I went to Germany particularly to ascertain what success had been obtained and to what extent these preparations could be safely and wisely applied. I saw the preparations in use in certain German clinics, notably at the sanatorium at Hohenlychen, near Berlin, but the onset of hostilities and the impossibility of obtaining the German preparations, together with pressure of work resulting from the war, led me to abandon temporarily any attempt to procure or employ them.



1. A. B., on admission. 2. After sun treatment alone. 3. After application of brass paste; note crateriform ulceration in actively diseased area. 4. On discharge.

The Brass Treatment of Tuberculosis.

In 1917 I had the good fortune to meet Dr. Ellis. Unconscious of the work already done by German and other workers, he had alone and independently discovered the value of suitable copper preparations, and had evolved and elaborated a treatment and technique which was apparently safe in operation and produced results more convincing and more favourable than any I had observed in Germany.

Single handed he had performed the necessary animal experiments essential before his preparations could be applied to the tuberculous human subject. His preparations caused comparatively little pain in application, and in addition had always proved innocuous. The combination he introduced of trinitrophenyl with brass represented a very considerable advance, inasmuch as it appears to have limited the danger of constitutional disturbance, of activation of distant tuberculous foci, or of metastatic development.

Many of the results obtained at Alton have been impressively favourable. Caution has been exercised in the application of this new therapeutic measure and the cases have been very carefully selected. Probably even more striking results might have been obtained had greater boldness been permissible, but the necessity of the greatest care has been ever borne in mind. In cases where rapid improvement has not been obtained this method of treatment has been abandoned until further experience justifies more extended trial, but in no case with the caution exercised have any ill-results been discoverable, and it appears that we may reasonably hope that a substantial advance has been made in the treatment of tuberculous disease. Further investigation is proceeding on the treatment of deep-seated lesions which will be the subject of later reports.

It may be here mentioned that the chemotherapeutic treatment of tuberculosis appears to be most effective when associated with the simultaneous application of heliotherapeutic measures effected under favourable hygienic conditions.

In this paper I present reports of two cases of external tuberculosis; in the first the result has been entirely favourable; in the second treatment has not been completed, but substantial progress has been made and treatment is proceeding.

Details of the technique are given in Dr. Ellis's contribution and need not here be repeated. As to the final results and possibilities of relapse, no opinion can yet and for some

5. I. J., on admission. 6. After application of picric-brass paste; note sieve-like ulceration. 7. Condition on Jan. 15th, 1919; treatment still proceeding.

time be authoritatively expressed. It has always to be remembered that tuberculous disease is a generalised infection of which any particular lesion should but be regarded as a local manifestation. The cure of such a lesion cannot therefore be necessarily associated with elimination of the disease, but there are indications that by the chemotherapeutic method it may be possible eventually to rid the sufferer from tuberculosis as effectually of his infection as specific drugs can eradicate the disease in syphilis. Very much must be done before this can be accomplished, too great caution cannot be observed, but even with these limitations optimism is permissible, and the brass treatment of tuberculosis foreshadows possibilities in the future which may be hoped for if not expressed.

It may be observed that Dr. Ellis uses cod-liver oil as the base of his preparations. Confirmation of the specific effect of cod-liver oil, used in a form known as sodium morrhuate, is afforded by Sir Leonard Rogers's recent work, which is supported by the observations of others.[6]

Account of Cases.

The following are the notes of Case 1:—

CASE 1.—A.B., admitted April 27th, 1916, with tuberculous ulceration of the plantar surface of the right foot extending round to the dorsum. (See Fig. 1.) Condition said to have existed for eight years, and to have resisted all treatment. Amputation of little toe had been performed and amputation of foot had been advised. Patient was sent to Alton in the hope that amputation might be avoided.

On admission the child's general condition was fair; he had a tuberculous eruption on the trunk and a tuberculous ulcer over the external condyle of the left femur.

With graduated sun treatment the patient's general condition greatly improved, the eruption on the trunk gradually disappeared, the ulcer on the femoral condyle healed completely, but, though heliotherapy was well tolerated and pigmentation satisfactorily established, the plantar ulcer could not be completely healed. Both during the summer of 1916 and of 1917 the improvement in the condition of the foot became marked, but though healed in the centre it continued to slowly extend at the periphery, and with the cessation of heliotherapy retrogression was always noted. The condition of the foot on Dec. 15th, 1917, is shown in Fig. 2.

On Dec. 28th, 1917, brass paste was first applied and thereafter every two days, alternating occasionally with brass oil, until Jan. 23rd, 1918. The ulcer had not then healed, but it was healthy in appearance and treatment with brass was discontinued for one month. Thereafter only occasional applications of brass paste were made, to observe more closely the effects produced. The condition at the beginning of April, 1918, is shown in Fig. 3.

The reaction which followed the application of the paste may be described as follows. The diseased area to which the paste had been applied became red, engorged, the former purulent discharge was replaced by a clear exudate and there was marked crateriform destruction of the tuberculous infiltration. In other words, in the part diseased there appeared the phenomena associated with aseptic inflammation proceeding to cellular necrosis in the tuberculous tissues. With the simple brass paste used in this case inflammation was at times associated with pain, but in subsequent cases, when using the picric-brass paste prepared by Dr. Ellis the absence of considerable pain was notable.

Neither in this nor in any other case have I noted any exceptional constitutional disturbance; the liver was not enlarged, there was no tenderness in the hepatic area. Nothing abnormal was found at any time in the urine. Especially noteworthy was the selective action of the paste, healthy tissue being in no way affected. The clean cut ulcers formed after the paste had been applied had healthy granulating surfaces, in some cases the areas immediately surrounding became somewhat livid in appearance, were engorged, and exuded clear serum. Subsequently rapid healing occurred except in those areas where the tuberculous tissue had not been completely destroyed. It was notable that in some cases the ulcers formed healed, but subsequently broke down. Doubtless, owing to imperfect contact some tuberculous nodules had not been attacked and disintegrated. This fact makes it important that treatment should be continued sufficiently long to obtain access to and completely eradicate the tuberculous infiltrate.

The lesion was soundly healed by midsummer, 1918, but the patient was detained until August 19th, 1918. The condition of the foot on discharge is shown in Fig. 4. The ulcerated surface was covered with sound, healthy skin, softer in texture and lighter in colour than that covering the rest of the sole, but already beginning to take on the character of the uninjured skin of the sole. Sensation was normal and the boy able to walk naturally without limp and with no discomfort.

It should be added that heliotherapy was combined with the chemotherapeutic measures employed in this case with, I believe, great advantage to the patient. Sun treatment aided in the healing of the ulcer and was of great advantage to the general condition of the patient. There was no keloid at all in the scar. It will be also observed that there was an indication of commencing normal pigmentation in the skin covering the formerly ulcerated area.

The chief points of interest in this case are:—

1. The brass paste was chemotherapeutic in action; it instantly attacked and speedily destroyed the tuberculous infiltrate to which it had access; it was specific and selective; it had no action on the healthy skin; it was innocuous.

2. With chemotherapy alone the ulcer would probably have healed, but the combination of chemotherapy and heliotherapy was particularly advantageous.

3. Sun treatment alone healed the trunk lesions and small femoral ulcer and immensely improved the general condition of the patient.

4. The plantar ulcer improved under sun treatment and possibly would have eventually healed by this method of treatment alone, but the very slight penetrability of the ultra-violet light rays only permitted very slow improvement and did not prevent some extension of the ulcer at its periphery.

The second case is now recorded.

CASE 2.—Patient I. J. admitted with extensive lupus of right cheek and two separate lupus areas, one below right ear, the other under the chin. Fig. 5 illustrates appearance before treatment commenced. I reproduce the following extract from my notes of this case:—Sept. 12th, 1918: Treatment commenced. Picric-brass paste applied. Sept. 18th: The whole of the affected areas are markedly inflamed; there are many bleeding points on the surface. The periphery is less "heaped up." There are numerous punched-out ulcers, most marked at the periphery. Sept. 30th: The affected areas are not so inflamed. They are pale pink at the periphery and more anæmic centrally. There are numerous small punched-out ulcers circular or irregular in shape. There is no pus, but a film of glairy fluid over each ulcer (Fig. 6). Oct. 12th; Marked improvement. Periphery still slightly thickened, some keloid, no ulceration. Subsequently improvement was slower, occasionally ulcers again formed. Skin remained injected, but the redness and thickening was markedly diminished after application of blue paste (copper oleate), as advised by Dr. Ellis. Jan. 15th, 1919: While condition has very markedly improved and there is no ulceration the tubercle is not yet eradicated (Fig. 7). The skin remains somewhat injected and nodules can be seen and felt, most marked at the periphery. In fairness it should be explained that the photograph (Fig. 7) does not do adequate justice to the improvement effected.

Treatment is being continued and picric-brass paste again being applied. Further nodules are being broken down and improvement is maintained. The lupus patches below the ear and under the chin are now hardly visible.

In this case no light treatment was employed. When treatment is completed it is hoped to report the case further. A number of other cases are now under treatment. With improved technique and greater experience more rapid improvement is being effected.

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ABERDEEN ROYAL INFIRMARY.—At the annual meeting of this institution the report submitted stated that during the year 1918 15,810 patients were treated, or an increase of 349 in-patients and 6 out-patients on the previous year. Since the outbreak of the war 987 sailors and 773 soldiers had been treated. The expenditure showed a deficiency over ordinary income of £6236, of which £4400 were refunded by the Government for naval and military patients. The convalescent hospital still showed an accumulated debt of considerably over £2000.

PICRIC-BRASS PREPARATIONS IN THE TREATMENT OF LUPUS

AND OTHER FORMS OF TUBERCULOSIS.[1]

BY HENRY A. ELLIS, M.B., CH.B. DUB.,

TUBERCULOSIS MEDICAL OFFICER FOR MIDDLESBROUGH; LATE SUPERINTENDENT, COOLGARDIE SANATORIUM, W. AUSTRALIA.

THE more exact scientist looks with suspicion on empiricism, and yet empiricism has been the road that medicine has most generally followed. This is by way of apology for the present paper, the result mainly of empirical deduction, and though the road has been long, tortuous, and inexact it has opened up possibly a path of some importance.

Earlier Observations.

The control of the damage caused by the *Bacillus tuberculosis* and its products has always appeared to me exceptionally difficult. Some 30 years ago, before opsonic indices and antibodies, I said: "The direct destruction of the bacillus was unthinkable, as it seemed impossible to suggest anything for its elimination without destroying the tissue in which it was embedded." So in investigations then I gave up all study of germicidal action and devoted my attention to increasing the resistance of the tissues. Even when Koch's tuberculin came out I was not swept away with the current, and it was not till reading Riviere's and Morland's work on tuberculin that I grasped the true inwardness of Koch's discoveries.

I had long held that, even if some method of eliminating tuberculous conditions was discovered, it must be demonstrated by the cutaneous manifestation. When first attacking the problem in England I was glad to have an opportunity of doing so in the many forms of lupus seen at the dispensary, for studying which in Australia I had little opportunity. For the last four years most of my original work has been devoted to that side of the disease. I looked on the lupus question as the direct progression of the study I had given to the cutaneous reactions to tuberculin, already published.[2] The study of these cutaneous reactions led to a general recognition that tuberculous cutaneous deposits were of much wider distribution than was generally supposed, that nearly all cases of phlyctenular disease and many cases of blepharitis were hypersensitive, suggesting the recognition of their tuberculous origin. Treatment on these lines leads to rapid and permanent cure. This time has amply confirmed.

But the question still remained unsolved how to get rid of heavier and more extended deposits displayed in more regular forms of lupus. The question here was the destruction of the tuberculous tissue, even if it entailed the healthy tissue in which it was embedded. Most modern methods aim at this destruction, and they all destroy a certain amount of the healthy tissue. An attempt was made to achieve this result by pressing the destructive action of tuberculin to the limit. In the cases where failure or autointoxication was produced a considerable series of observations led to the conclusion that a certain combination of basic salts of sulphate of copper and zinc, when combined in an oily medium at definite temperature, gave a much more regular result than anything I had used up to date. I call this preparation brass paste.

Brass Paste.

The combination is definite and chemical and approximates an old formula for making brass. It is formed by combining basic copper sulphate with basic zinc sulphate in the proportion of 86 per cent. basic copper to 14 per cent. basic zinc. The basis of the preparation has been used by me for many years in intractable chronic eczema, nearly always with success. It had considerable restrictions in lupus, but a continuous series of experiments has gradually eliminated them. This paste is easy to apply. When the covering plaster is removed after 48 hours the tuberculous tissue will be found extensively destroyed and removable as small caseating nodules, while the uninfected tissue is uninjured. The caseous material is often stained with the preparation, but the healthy tissue is not. This localised destruction gives a curious and characteristic appearance, especially in verrucosa. Where the tuberculous deposit is superficial and limited comparatively few applications destroy the growth, but in the majority of cases many applications are necessary. The problem is only one of contact; if contact can be obtained the result is always assured.

The paste is quite innocuous to healthy tissue, it can be placed in the eye without causing other than temporary irritation, easily controlled by first instilling eucaine and adrenalin. This is shown in a case cured by the application of the paste to the conjunctiva of the everted eyelid, resulting in removal of all tuberculous tissue. The case was of over 20 years' duration, and as she was employed in a hospital, had had many treatments. The paste can also be applied to the nasal mucous membrane without producing any reaction unless the tissue is invaded by tubercle. But if the nasal mucous membrane be involved caution must be used or it is apt to produce headaches, which may be very serious if the nasal fossæ are involved. Ordinary ulcerated non-tuberculous surfaces are not affected by the application, and it has apparently little effect on their progress. In case of doubt an application of the brass ointment will soon settle the matter.

In the earlier investigations, as has been so frequently the case with lupus, the results were unequal; and certain disadvantages delayed the publication of the method. The most serious and difficult was a tendency to light up some quiescent focus. These local manifestations were sometimes accompanied by certain constitutional results. This position has now been remedied by the addition of trinitrophenyl.

Brass Oil: Addition of Trinitrophenyl.

It was at first difficult or impossible to reach the deeper deposits. Then there were also the various thickenings of the cutaneous and other tissues of a lymphatic or glandular nature so intimately associated with tuberculous lesions, which were uninfluenced by the earlier preparations. The superficial tubercular abscess presented certain problems, all its own, especially the cold, small, non-spreading tubercular abscess formation limited to the skin entirely, which is not usually accompanied by glandular enlargement. It is often multiple, and this condition, for purposes of differentiation, I call intradermic abscess, as a distinct division of lupus. The nature of their tubercle bacilli is now being investigated by Dr. Stanley Griffiths, of Cambridge. These abscesses are surrounded by healthy tissue, and there is little or no tendency to invade the adjacent area. They are very difficult to heal and leave many of the unsightly scars. They are placed under the head of scrofuloderma, but the absence of glandular enlargement precludes that term. They are invariably tuberculous, and the majority up to the present have been due to the bovine bacillus.

For these conditions a suitable medium is a fluid preparation called brass oil, or, shortly, "bro." Its extensive and general application has produced many unexpectedly favourable results. This oil, transparent and green in colour, is produced at a definite temperature, over a considerable period, and is applied on gauze covered with jaconet and left on from two to seven days. Definite constitutional symptoms indicated that it is partly absorbed along the line of the lymphatics, though these may largely be due to the resolution and absorption of the tuberculous materials. The conditions which yield most readily to its influence are those produced by lymphatic thickening, especially the condition constituting pseudo-elephantiasis, of which one case is illustrated (Figs. 1–4), as well as the general thickenings in scrofuloderma. The swellings in the neighbourhood of joint or bone disease are also reduced by it; in fact, all swellings produced by lymphatic obstructions, the result of tuberculous invasion. It was the early investigations of the bro treatment that brought most into prominence the lighting up of distant foci and the constitutional disturbances.

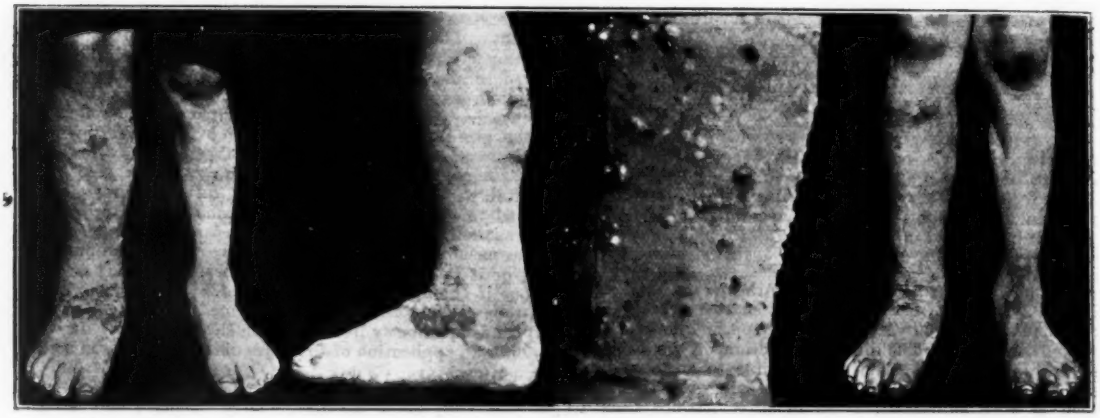
On further investigation it was found that the trinitrophenyl or picric acid series had a distinct action in controlling these conditions, and extended observations—not yet completed—resulted in a further addition of a definite proportion of trinitrophenyl to the brass preparations. After this addition metastatic developments entirely ceased, and cases of pallor and loss of weight no longer occurred, but distinct improvement of the general appearance and health. The specific action of the brass treatment was materially increased, an unlooked for and very gratifying attainment.

[1] A paper read before the North of England Tuberculosis Association.

[2] THE LANCET, 1916, ii., 638.

Tuberculous Pseudo-Elephantiasis. Four years' duration. Leg hard and solid. Treated with brass oil (bro).

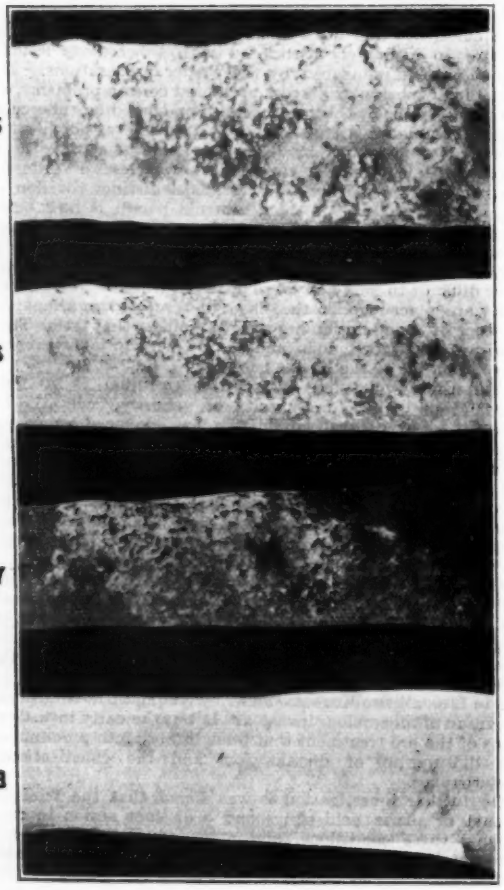
1 2 3 4



Before treatment, showing comparative size. 2. Side view, showing warty growth before treatment. 3. Showing discrete caseating nodules of tuberculous matter produced by treatment; elevations are soft and caseous. 4. Leg after eight months' treatment; wart gone; tissue soft and pliable; size reduced, but still larger than the other; present condition almost normal.

Extensive Lupus Verrucosa both sides of forearm. Fifteen months' duration.

5 6 7 8



5. Showing character of growth, with islands of resolving tissue during treatment. 6. Islands further developed. 7. Pitting caused by caseation of tuberculous deposits caused by application of brass paste. 8. Case completely cured; time between Plates 5 and 8, four months.

But in certain individuals a superficial dermatitis limited the use of the new remedy, although the condition was very rapidly relieved by soda-bicarbonate solution. No effect is exerted on the deeper tissues, as was seen when trino or picric bro was injected into abscesses or sinuses.

By the time these experiments were completed a most valuable clinic had been acquired by the gradual selection of refractory cases, out of some 150 examples of cutaneous tuberculosis. At the present time there are still some six or eight more or less refractory cases of extreme value for observation purposes, but they are a rapidly diminishing series. [Recent observations have diminished these now to the vanishing point.]

Efficacy of Remedy.

One of the means of testing the efficiency of the remedy is as follows. When a smear of caseous material from a tuberculous deposit is made on ordinary Dorset egg medium, a slight guttering is often produced due to its solution. This is probably due to the action of trypsin or some other ferment released by the process of caseation. This guttering did not occur when the brass media were mixed with the pus of ordinary abscesses. Accurate determination has yet to be made, but it has proved a good rough-and-ready method of testing the efficiency of the various products during the search for increased efficiency, and when compared with the tissue destruction effect proved fairly reliable.

By using these preparations it was easy to obtain pure cultures of the particular organism causing the disease, proving also that the remedy was not immediately destructive to the life of the bacillus, but a series of observations showed the gradual breaking up of the organism. Time has only allowed this casual observation, but the process of obtaining pure culture from tubercular growths by this method is so accurate that I was recently able to forward 16 out of 17 successful cultures to Dr. Griffiths to have the variety of tubercle definitely classified, and if possible to have the attenuation or otherwise determined.

After considerable investigation the preparations have been found innocuous except when tubercle has been present. The various preparations have been injected in man and animal, both intravenously and subcutaneously, in considerable quantities without producing unpleasant symptoms. The subcutaneous application of the paste in large doses in the guinea-pig demonstrated that the material was decomposed, and apparently some variety of yellow material (copper?) was deposited along the course of the lymphatics, showing a very interesting pathological preparation.

The next step was to see if it was successful in the hands of others. I first asked Mr. H. J. Gauvain, of Lord Mayor Treloar Cripples' Hospital, to coöperate with me, as his

unrivalled material in bone tubercle cases and his wide experience made him an ideal judge. My own cases of bone tuberculosis, limited in number, have been successful, sometimes dramatically so. Mr. Gauvain has investigated in this direction much more extensively, and his reports to date have been most encouraging. Several of those present have also seen the results in visits to my dispensary, and some have made tests, and up to now all reports but one have been favourable.

Led by the results of the effect in experimental tuberculosis in animals, I have for some time been using it in other forms of tuberculosis, notably abdominal, with satisfactory results. The exact method and dosage is still a matter for investigation. Observations have shown that very small doses by the stomach produce gastric irritation. The whole question is a matter for a further communication.

Face Lupus Vulgaris. Nine years' duration. Previously treated by X rays, freezing, &c.

9 **10** **11**

9. Before treatment. 10. During progress; ulceration defined. 11. Five months after

Methods of Treatment.

So far one may say that the brass treatment leaves available four preparations of specific potency in tuberculous deposits. These preparations are: (1) Brass paste, an oily preparation of a compound of basic sulphate of zinc and copper; (2) brass oil or bro, a preparation of the soluble portions; (3) and (4) both these preparations, in combination with approximately 1 per cent. of trinitrophenyl, called respectively trino-brass and trino-bro. Great care is needed in preparation as they are easily decomposed and rendered inert at comparatively low temperatures, the whole process going into weeks. Instability is naturally a condition, for, if the combinations were not weakly allied they presumably would not obtain their specific action. These preparations are more efficient, especially in facial cases, when mixed with adrenalin and cocaine or eucaine.

As far as ascertained, the remedies are entirely innocuous to the non-tuberculous except when given by the mouth. With the tuberculous hypersensitive care in applying the simple brass preparation must be taken to avoid auto-infection from tuberculous absorption, producing loss of health, lowered weight, pallor, and metastatic abscesses. But generally ample warning is given. This danger does not hold of the trinitrophenyl remedies, but here the picric sensitiveness of the external cutaneous layers must be watched for. I am inclined to think that picric sensitiveness encourages local tuberculous extension in cases showing it.

The application of the brass paste is made every two or three days under zinc plaster. The bro is applied either as a foment on gauze with jaconet covering once, twice, or thrice weekly, as indicated, or only painted on the skin when a rest from active treatment is required. The bro collar is the most efficient way of dealing with glands of the neck or scrofuloderma; it very rapidly diminishes the lymphatic engorgement, and is applied twice weekly, and should cover all round the neck from ear to collar bone. The staining of the skin is easily removed with vaseline. The trino-bro is the best preparation for these cases unless they are picric sensitives, which is rare.

The lighting-up of phlyctens must always cause temporary discontinuance of the treatment. They should be treated with tuberculin as described in THE LANCET,[3] or by a dilution of picric bro 1 part, to cod-liver oil 3 parts, brushed on with a small camel-hair brush after the eye has been made anæsthetic. These phlyctens are liable to occur in nasal lupus, especially of the interior mucous membrane. Outside these precautions I know of none other, when the remedy may be used with the greatest freedom. Another refractory condition amenable to treatment is dactylitis. The swelling reduces, and unless the bony enlargement is great the finger returns largely to a usable condition.

Note.—Arrangements have been made whereby a supply of these preparations can be obtained from Mr Jack L. Robinson, pharmaceutical chemist, Middlesbrough, Yorks.

[3] THE LANCET, 1917, ii., 157.

THE HYSTERICAL PERPETUATION OF SYMPTOMS.

BY C. H. L. RIXON, M.R.C.S.ENG., L.R.C.P.LOND.,
CAPTAIN, R.A.M.C.; NEUROLOGIST, READING WAR HOSPITAL.

MUCH has recently been written concerning the treatment of hysterical disorders in soldiers, especially at neurological centres. There is great scope for similar work in general hospitals; the same methods will effect very marked improvement, and even cure, in cases not usually regarded as hysterical.

All surgeons are now familiar with the type of case in which improvement, not amounting to complete recovery, follows a nerve suture, yet there may be much more recovery than is apparent, masked by what is now an hysterical disability. Similarly, many abnormal gaits, following severe organic lesions, are hysterical. Rapid improvement, even amounting to cure, can be obtained in a few minutes or hours by methods similar to those employed to-day in the treatment of hysterical disorders, and summed up in the word "psychotherapy."

In treating these conditions there is one factor indispensable to success—i.e., the patient's own belief that he can be cured. At neurological centres this point is gained by the "atmosphere of cure" prevailing. The patient is in a ward with others who until recently were, they tell him,

just as bad as he is. *They* have been cured, *everybody* who comes there is cured, and the newly admitted patient soon views his own case as one in which cure will be effected also.

My own experience has been gained largely at an orthopædic centre, and at such centres there is apt to be an atmosphere of chronicity. A patient with, say, an hysterical drop-foot is mixed with the crippled and patients whose recovery must be a matter of months. It is hard for him to believe that his foot is curable in an hour, and it is impossible for him to *expect* it. But by putting him into a ward amongst others like himself, some already cured, his views may be altered. Such a patient if put to bed in these surroundings for 48 hours will be found confident of speedy recovery when he goes to the treatment-room at the end of that time. All that are then needed are persuasion and re-education and a large store of patience.

Hysterical Disabilities.

As examples of hysterical disabilities thus treated I will cite the following case:—

CASE 1. *Scoliosis of nearly four years' duration with 2½ in. apparent shortening of left leg, cured in 70 minutes.*—Fig. 1 A shows a patient with well-marked scoliosis of nearly four years' duration, following a blow on left side of pelvis. The pelvis was tilted; 2½ inches of apparent shortening of the left leg. For three years a surgical boot with a sole 2½ inches thick had been worn on the left foot. Whilst wearing this boot he did not limp, but the scoliosis was more marked. He believed himself to be a permanent cripple. Fig. 1 B shows the spine perfectly straight after one hour and ten minutes' treatment by manipulation and persuasion. He could then walk and run normally with no limp, in ordinary boots.

CASE 2. *Contracture of hand of three years' duration cured in 40 minutes.*—Fig. 2 A shows a contracture of right hand of three years' duration, following a through-and-through bullet wound of the arm. Patient was seen in conjunction with Major J. L. Joyce, R.A.M.C.(T.). Patient had been invalided out of the Army as a permanent cripple with pension for 40 per cent. disablement over a year before he was sent to an orthopædic centre for treatment. The hand was blue, œdematous and shiny, and absolutely rigid, the fingers being immovable owing to intensity of spasm. In Fig. 2 B he is holding his hand open, after 40 minutes' treatment. He was then able to perform all movements of the hand normally, and the photograph shows the wrinkling of the skin of the fingers which followed the disappearance of the œdema.

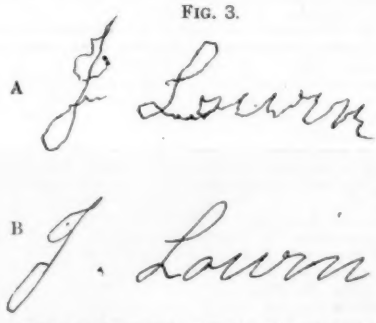
CASE 3. *Hysterical tremor of 16 months' duration cured in 40 minutes.*—Fig. 3 A is the signature of a man with tremor which he had had for 16 months following a fall down a ravine in the dark. The tremor was very quickly overcome (Fig. 3 B) as soon as full muscular relaxation was obtained by manipulation and persuasion in 40 minutes.

Such cases are purely hysterical. Many other cases could be quoted of the hysterical paralyses, contractures, blindness, deafness, mutism, tremors, vomiting, abnormal gaits, &c., with which the war has made all medical officers familiar.

Hysterical Perpetuation of Symptoms after Organic Lesions.

The point I wish to emphasise is the wide scope for such work in cases not usually regarded as hysterical, and which seldom reach the neurologist. There has been some severe organic disability with only partial recovery. There is a tendency to ascribe this remaining disability to permanent organic damage, and the cure is much slower or less perfect than need be. But it is frequently functional. The following case is an example:—

FIG. 3.



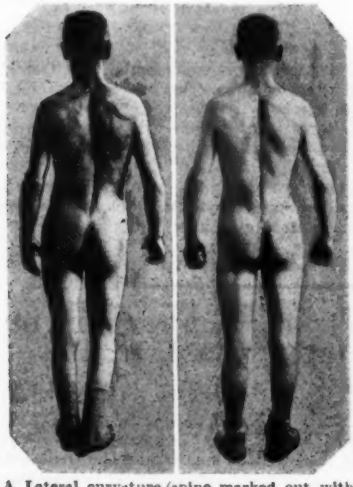
Tremor, patient also stammered. Duration 16 months. Treatment 40 minutes. Stammer also cured (Case 3).

CASE 4.—Wounded in October, 1917. Bullet entered the chest at posterior axillary border about 2½ inches below acromion process on left side. It passed forwards and inwards, damaging circumflex nerve, and lodged just behind second rib on left side, near sternum. When first seen by me 13 months later, he was able to perform only limited abduction of the left shoulder, the arm not coming up to the horizontal in spite of obvious efforts. Very marked wasting of the deltoid, which only responded feebly to strong faradism; some blunting of sensation over it. Improvement having ceased, he had been discharged from hospital many months previously; the loss of power was thought to be due to the wasted deltoid. After a quarter of an hour's treatment by manipulation and persuasion he was able to raise both arms smartly and bring his hands together over his head without flexion of the elbows or wrists. The left deltoid was still much weaker than its fellow and there was still imperfect sensation, but recovery had been masked by a superimposed hysterical condition.

The following case illustrates a similar state of affairs following nerve suture:—

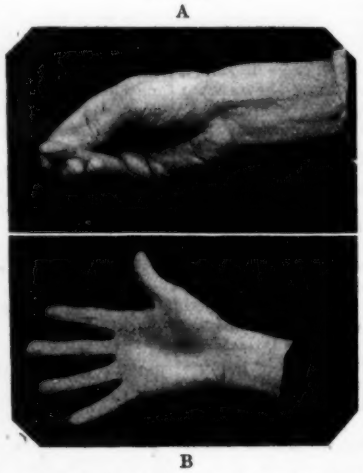
CASE 5.—Wounded by a shell on April 8th, 1917. The wound was 3 inches above the left elbow; compound com-

A FIG. 1. B



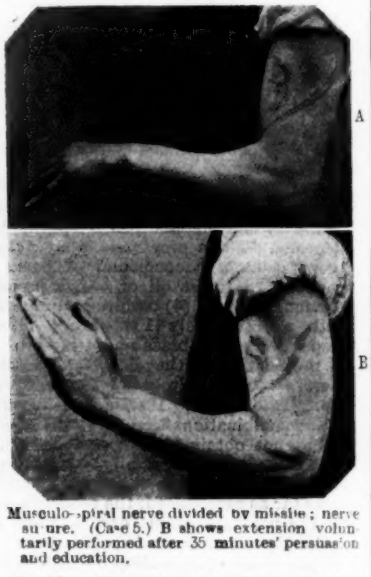
A, Lateral curvature (spine marked out with grease pencil); duration 4 years. B shows the condition after 70 minutes' treatment (Case 1).

FIG. 2.



A, "Wooden" rigidity of hand; no movement at all; duration 3 years. B shows the result of 40 minutes' treatment (Case 2).

FIG. 4.



Musculo-spiral nerve divided by missile; nerve suture. (Case 5.) B shows extension voluntarily performed after 35 minutes' persuasion and education.

minuted fracture of humerus and complete division of musculo-spiral nerve. The wound was septic; after about three weeks several small pieces of bone were removed under an anæsthetic. In three months the humerus was soundly united, with practically perfect movements at the elbow-joint; the wrist-drop was controlled by a "cock-up" splint. In August, 1917, suture of musculo-spiral. Nerve found completely divided; bulb at each cut end. The two bulbs were excised, leaving a gap of about 2 inches; end-to-end suture; considerable tension at point of union. The wound healed by first intention. Three months later there was some return of voluntary movement in the extensors and the analgesia was less marked. Twelve months after the nerve suture there was 50 per cent. of recovery in the extensors and sensation was normal. Massage, galvanism, faradism, ionisation, and electric baths, persisted in all this time, produced no further improvement and he was discharged from the Army in October, 1918.

When I saw him first, soon after Christmas, 1918, there had been no further improvement since August, 1918. He was able to make some extension of the wrist and of the fingers; movements were jerky, accompanied by some spasmodic contractions of the flexors. In Fig. 4 A the scar of the operation for nerve suture can be seen above the external condyle. The photograph was taken whilst the maximum amount of extension of the wrist and fingers was being made. He was treated by persuasion, manipulation, and re-education for 35 minutes, when voluntary extension was as shown in Fig. 4 B. Movements were now smooth and easy, and he was able to use his hand normally, the total recovery from the original lesion being practically 100 per cent.

CASE 6.—Patient, aged 37, sent to me with the following history:—Three and a half years previously he had had an acute illness; the main characteristics were slight pyrexia and general malaise, pains in legs, some difficulty with bladder, and increasing weakness of legs. He was in bed for about three months. The symptoms largely subsided, but he was left with the "weak legs," and his back was bent. On examination he was very bent, and hobbled with two sticks. The legs showed the signs of a lesion of the lateral tracts, weakness, spasticity, exaggerated tendon-jerks, clonus, and a bilateral extensor response; abdominal reflexes absent. His condition had been *in statu quo* for about two years; yet a great part of this, in spite of its organic basis, proved to be the perpetuation of symptoms by suggestion. After manipulating the legs and back, with persuasion to increase the range of movement voluntarily, for half an hour, the patient was able to stand upright and to walk without sticks. There was still some spasticity of the legs, but it was not very noticeable except when he tried to run. He was delighted with his improvement, and took some pride in exhibiting it to others. The physical signs were, of course, unaltered.

Conditions in which Functional Disabilities Occur

The last three cases are instances of the hysterical perpetuation of symptoms long after the original causes for them had disappeared. This is really a very common occurrence, and many similar cases might be cited. In a multiplicity of conditions this is liable to occur, especially in those which run a chronic course; nerve suture, neurolysis and capsulotomy of a traumatic neuroma must be especially mentioned. Disordered gaits are perpetuated after fractures and injuries of the lower limbs; sciatica is also specially liable to produce this condition of affairs, and many other diseases with a chronic or semi-chronic course.

Several factors help in suggesting the perpetuation of symptoms, as, for instance, the use of crutches and sticks. An officer had his foot severely crushed by a motor lorry, but there was no fracture or dislocation. An extensive ecchymosis of the dorsum cleared up in some three weeks, but he was unable to bear any weight at all on the foot when he got out of bed, and he asked for a pair of crutches. After 10 minutes' practice, however, with persuasion and encouragement, he was able to walk and even to run normally without limping, and there was no pain in the foot. On the following day he voluntarily went for a walk of six miles. In this case, only one of many, it is probable that had the patient been given a pair of crutches the idea of the disability would have been confirmed, and a disordered gait would have resulted when he discarded them after, perhaps, many weeks or months. Many other things may be the means of suggesting a perpetuation of a disability, and in some cases it is, no doubt, due to auto-suggestion.

A very large number of chronic cases of all kinds will amply repay time spent in treating what are really hysterical disabilities. Much patience and painstaking are needed, but great improvement can be effected, and sometimes complete cure.

AN INVESTIGATION OF CASES OF INFLUENZA

OCCURRING IN THE WOOLWICH DISTRICT DURING SEPTEMBER, OCTOBER, NOVEMBER, 1918.

BY J. A. BRAXTON HICKS, M.D., M.R.C.P. LOND., D.P.H.,
TEMPORARY LIEUTENANT, R.A.M.C.;
AND
ELIZABETH GRAY, M.B., CH.B. ABERD.,
ATTACHED R.A.M.C.;
BACTERIOLOGISTS, ROYAL HERBERT HOSPITAL, WOOLWICH.

Introductory.—During the summer of 1918 it fell to the lot of one of us (B. H.) to investigate the then prevailing and mild epidemic of "influenza." The results were not published, but briefly, though proving interesting as regards the effect of this disease on the leucocyte counts, they were entirely negative as regards the isolation of *B. influenzæ*. In making this the second series of researches on influenza the first thing that we wish to insist upon is *that we have used exactly the same methods and the same blood medium* (Gordon's trypagar plus rabbit's blood) in investigating this epidemic, as in the mild one dealt with in the summer. In addition, we have examined the claims of a medium which was highly recommended by Dr. John Matthews[1] as suitable for *B. influenzæ*.

Our researches have been conducted *without selection of cases*. That is to say, except for refusing to examine material sent under conditions impossible for good bacteriological work, we have taken and examined anything sent down to us that seemed to offer possibilities.

General technique.—Sputum has been collected where possible in wide-mouthed sterile bottles with rubber corks. These were distributed to the ward sisters with instructions to send the first sample coughed up and not to collect a lot. This sample was then washed in sterile broth and plated out on trypagar plus rabbit's blood. The broth washings were also incubated. In some cases it was plated out also on Dr. Matthews's medium. Direct smears were examined also in every case. Naso-pharyngeal cultures were made with West's swabs and inoculated on to the media *at once* where possible.

Blood-cultures were taken by venepuncture in the ordinary way and 10 c.cm. was distributed in varying amounts into broth tubes.

Results.

Naso-pharyngeal swabs.—The naso-pharynx in all cases seen by us has been injected and very sloppy. A prominent feature is the greatly swollen and elongated uvula, and to this uvula must partly be attributed the irritable cough and retching in many cases. Some cases have epistaxis from the great engorgement of the parts. Naso-pharyngeal swabbings have been positive for *B. influenzæ* in 80 per cent. of cases. Other organisms have been present, such as *M. catarrhalis*, pneumococcus, streptococcus.

Sputum.—The sputum has varied greatly. Some specimens have been thick, sticky, and stained with blood to varying degrees. This blood staining is not the "rusty" staining of croupous pneumonia, but something much brighter and in some cases amounting almost to hæmoptysis. Other specimens have been of a yellow-green "nummular" type, while others have been white and slimy. Generally speaking, we consider the white slimy specimens occur just at the beginning and when the case is clearing up, particularly the latter. The blood-stained ones indicate pneumonia, or at least severe capillary bronchitis, and that the man is a case to be anxious about. The yellow "nummular" ones seem to be chiefly where the trouble is mainly bronchial or where only a small broncho-pneumonia patch or so is present. We have seen rather more of the yellow "nummular" than the blood-stained type in the laboratory.

The result of examination of direct films of sputum has shown 70 per cent. positive for *B. influenzæ*, and of cultures from these same cases 75 per cent. positive. It has been interesting to us to find in some cases negative for *B. influenzæ* by direct film that the organism has turned up on culture. In one or two cases we failed to grow the organism in spite of its obvious prevalence as seen in the direct film. One may

[1] THE LANCET, July 27th, 1918.

say unhesitatingly that the pneumococcus has been present in 100 per cent. of the cases. In practically every sputum we have examined it has been predominant over *B. influenzæ*. Other organisms have been present, *M. catarrhalis* and mouth streptococci, but we have not been able to confirm the presence of any particular hæmolytic streptococci in our cultures as has been mentioned by some observers.

We would like to point out here what have been to us *very interesting features in the bacteriology of the sputum*. At first it was comparatively rare to find *B. influenzæ* in direct films, the pneumococcus always predominating, but as the number of admissions grew and the severity of the epidemic increased we began to find *B. influenzæ* readily, and isolated it easily. Even in mild cases now at the decline of the epidemic the *B. influenzæ* is readily found. This is in accord with what occurred in the great pandemic of 1888-92, for the bacillus was only found towards the end of the epidemic in 1892 by Pfeiffer.

Another interesting feature is the pleomorphic character of the bacillus in culture. It occurs in rods of very varying length (0·5-1·5μ), and sometimes the bacillus is almost a coccus, so short is it. Again, it tends in some cultures to occur in pairs and short chains.

As regards the medium recommended by Dr. Mat'hews, we consider it fully bears out its claims, but we do not consider it superior to Gordon's trypsgar enriched with rabbit's blood except in one useful detail, and that is that it does seem to inhibit for a time the growth of other organisms, enabling *B. influenzæ* to be readily isolated. Gordon's medium tends to grow everything with equal intensity, and so *B. influenzæ* is not so easily isolated free from other organisms.

Pleural fluids.—In the early part of the epidemic empyema was uncommon, probably because the cases with extensive lung changes did not live long enough to develop one. In the latter part of the epidemic empyema was more common. The fluids were of a yellow-green colour and rapidly separate out into a layer of slimy pus below and bright yellow fluid above. In direct films cocci in pairs and short chains have occurred in practically every case; capsulation was observed also. In one case chains of great length occurred, but the chains had the appearance of being made up of a series of pairs of cocci. In culture the cocci always grew in pairs and chains, these chains always being very much longer than any seen usually in the direct film, and some were of great length. Where the chains were of great length they always had the appearance of *being built up of a regular series of pairs*, and the appearance was quite different to the ordinary streptococcus. This organism appears to be either the *Streptococcus mucosus* or closely allied to it, and probably *S. mucosus* is a variant of *S. pneumoniæ*. We had great difficulty in getting most pleural cultures to subculture freely even on blood media. In two of our cases we found *B. influenzæ* in the pleural fluid as well as *S. mucosus*. As regards hæmolytic properties on blood-smeared agar, our cultures varied even with cultures of apparently similar morphology. Some hæmolysed fairly; others showed no signs of hæmolysing; none hæmolysed well.

Blood cultures.—Of all our cases these may be regarded as the only ones in which it may be said that they were selected, since medical officers only requested this in severe cases. We obtained 50 per cent. positive cultures, and these cultures showed cocci with somewhat similar characteristics as those described in the pleural fluids. In no case, however, did we observe such long chains as in the pleural cultures, and the chains more closely resembled those of *S. pneumoniæ*. For some reason which we were unable to explain we could not get the organisms of the blood cultures to grow in subculture. The blood in the blood-broth mixture, however, did not undergo any marked hæmolysis even after four days.

Leucocyte counts.—We were able to confirm our previous results (summer epidemic) as regards the cases only affected by high temperature, pains, and no chest symptoms—viz., little or no leucocytosis, and generally a qualitative increase in the mononuclears.

In pneumonic cases ending fatally or cases of great severity we noticed that the leucocytes showed no increase, and in most cases a leucopenia, but that there was a qualitative increase of the polymorphonuclear cells. In one fatal case in which the blood culture was positive (pneumococcus) the count was as low as 3000 per c mm.

In the average severe bronchitis or mild pneumonia case there was a quantitative and qualitative polymorphonuclear leucocytosis. The leucocytosis was moderate, averaging 18,000 per c.mm. 80 per cent. of our cases showed a leucocytosis.

Post-mortem and histological findings.—The first point we wish to make is that in no case did we see those appearances conjured up by the term "grey hepatisation."

The average appearance of the lungs when removed from the thorax was that of an infant suffering from broncho-pneumonia. In the very acute cases they resembled acute hæmorrhagic broncho-pneumonia. As a rule, one lobe (usually a lower lobe) was more affected than the rest, and if the case had lasted some days this lobe might be solid. The cut section of a solid area was firm, of a deep-red colour, more resembling liver tissue, and a frothy purulent fluid oozed from the bronchi. Here and there a small greyish area with a wavy outline might be seen, but we saw no evidence of actual breaking down of tissue. This greyish area marked, however, an intense exudate into the alveoli. In the very acute cases there was no particular affection of any one lobe, all lobes usually showing areas, varying in size, of intense engorgement resembling hæmorrhagic infarction. The pleura was usually involved over the lung or lobe most affected, forming in some cases a thick gelatinous layer of 1 to 2 inches. The trachea and bronchi were always intensely engorged and covered with a tenacious muco-purulent coating. The liver and kidneys usually showed slight toxic changes.

Microscopical sections showed intense engorgement and dilatation of capillaries and blood-vessels. In places, particularly in the acute cases, the blood has escaped into the alveoli, and gives the appearances seen in ordinary hæmorrhagic infarction (of mitral stenosis, &c.). The exudate in the alveoli is chiefly of alveolar cells and mononuclear cells. Polymorphonuclear cells are relatively few, and this is a very striking feature, even in the solid portions. In sections of bronchioles and neighbouring alveoli in apparently non-affected areas the capillary engorgement is very well marked. It is also evident from any section how the completely solid state of a lobe is arrived at; for one can see that certain neighbouring areas are more involved than others, and that the inflammatory condition has spread peripherally till such areas coalesced, and where such areas are numerous in any lobe it is obvious that the lobe will become eventually solid.

We would suggest that the mode of infection is probably as follows. Infection of pharynx and trachea (nearly all cases complain of rawness over larynx and sternum at onset) with *B. influenzæ* which rapidly spreads to bronchi, bronchioles, and alveoli. This "lowered resistance" of the respiratory tract leads to a secondary infection with pneumococcus and perhaps other organisms—i.e., *S. mucosus*. It is a well-known fact that mixed infections are more severe than pure infections, and to this we may attribute the severity and mortality of this epidemic. In short, we regard the infection as an acute capillary bronchitis and alveolitis.

We cannot confirm in our work the presence of any constantly hæmolytic streptococcus as has been described by some workers. We may have been unlucky, but it does not seem essential to consider a hæmolytic streptococcus as constantly necessary to produce the intense blood engorgement seen in the lungs. The microscopic appearances alone show that the blood in the alveoli has resulted from a rhexis of the enormously dilated capillaries. Again the epistaxis that occurs can be seen to come from intensely engorged naso-pharyngeal vessels, and also the blood in the sputum is bright recent blood, not altered blood. This streptococcus is said by some to have been superadded as the result of the numbers of war wounds about, yet in peace time such appearances were familiar to every morbid anatomist.

We have been able to identify the "pneumococcus" in sections of the lung, but not *B. influenzæ*.

Summary of Results.

1. *B. influenzæ* was present in the sputum by direct film in 70 per cent. of cases and by culture in 75 per cent. of cases. Pneumococcus was present in 100 per cent. Other organisms of the *catarrhalis* type were present, and mouth organisms.

2. *B. influenzæ* was present in naso-pharyngeal swabs in 80 per cent. of cases.

3. In pleural fluids we found a pleomorphic streptococcus having many characteristics of the pneumococcus, but often occurring in chains of great length. Some cultures showed hæmolytic properties, others did not. We regard this as *S. mucosus*, which is a "variant" of pneumococcus probably.

4. Blood cultures were positive in 50 per cent. of cases and the organism was a pneumococcus, or a close ally of *S. mucosus* type.

5. A leucopenia was usually present in severe or fatal cases. In the average pneumonic case a moderate polymorphonuclear leucocytosis was present.

6 Post-mortem and histological appearances show the disease to be an acute capillary bronchitis and alveolitis.

We cannot conclude without reference to the assistance we have received from our laboratory attendant, L/Cpl. L. G. Blore. Our laboratory necessities throughout the whole of the epidemic were always forthcoming, and since this work was thrown on to the laboratory in addition to the routine work of the district, his success in this matter is one for which we desire to express our appreciation, and, indeed, was no small achievement on his part.

THE INFLUENZA EPIDEMIC IN BRITISH GUIANA.

BY F. G. ROSE, B.A., M.B CANTAB., M.R.C.S.,
GOVERNMENT BACTERIOLOGIST.

THE recent influenza pandemic appears first to have made itself manifest in Georgetown, the capital of the colony, in November, 1918. Clinically the symptoms do not appear to differ from those characteristic of the disease in other centres which have suffered its ravages. The disease has taken a fearful toll, more particularly of the lower classes of the community, the poor East Indian and black, generally already debilitated by the ravages of chronic malaria or filarial infection. Death has been due, in the vast majority of cases, to a rapidly fatal broncho-pneumonia, and the purpose of this article is to give a short account of the pathology and bacteriology of the disease in this country.

Post-mortem findings.—These are based on post-mortem examinations carried out on 24 fatal cases of influenza at the height of the epidemic. Generally marked cyanosis was present externally. Internally the pathological changes appear to centre in the respiratory tract; naso-pharynx, pharynx, larynx, trachea, and bronchi show congestion of the mucous membrane, with exudate varying to a certain extent in character, but generally tenacious and sometimes stained with blood. Pleurisy was rare, only being present in two cases, and then of the acute fibrinous variety.

The heart and pericardium showed no particular change. The lungs showed generally a broncho-pneumonia of the diffuse variety. If only a portion of a lung were involved, it was invariably the base, and a constant feature was the intense congestion of the lungs; the broncho-pneumonic areas, on section, are hard and reddish-grey in colour.

The brain was involved in only one case in a meningitis which proved to be of pneumococcal origin. The empyema and pyopericardium described as occurring in other parts of the world were never found. The spleen, when showing no evidence of malarial infection, was slightly enlarged, congested, and firm in consistence. An acute parenchymatous nephritis was present in a few cases. The liver showed frequently some fatty change.

Bacteriology.—An investigation was first carried out into the bacteriology of 13 cases of well-marked clinical type by means of post-nasal swabbing, as recommended by Matthews,[1] as well as by making films and cultures from the sputa. In these cases the culture-medium used was Matthews's trypsinised blood-agar, using sheep's blood. From 9 cases of the 13 a bacillus morphologically indistinguishable from Pfeiffer's bacillus was isolated, in 2 cases in pure culture. A hæmolytic streptococcus was present in only one case, Friedländer's bacillus in one case, while pneumococcus co-existed with Pfeiffer's bacillus in 6 cases, and with *Staphylococcus albus* in one case in which they were the only pathogenic organisms isolated. Out of 4 cases which gave a negative result in culture films made from a post-nasal swab revealed the presence of an influenza-like bacillus in two.

Bacteriological examination of the lung tissue and exudate in the 24 cases mentioned above gave the following results. In these cases the medium used was Levinthal's, as described by Fildes, Baker, and Thompson.[2] From 15 cases a bacillus morphologically identical with Pfeiffer's bacillus was isolated. In 10 cases pneumococcus was present along with Pfeiffer's bacillus, while from 3 cases it was isolated in pure culture. *Staphylococcus albus* was present in 3 cases along with pneumococcus and Pfeiffer's bacillus, while a hæmolytic streptococcus was found in 2 cases, once in pure culture and once in conjunction with the influenza bacillus of Pfeiffer.

Prophylactic inoculation.—In view of these results a mixed vaccine was quickly prepared, containing *Bacillus influenzæ*, pneumococcus, streptococcus, and staphylococcus, using strains isolated during the outbreak and following closely the recommendations of the War Office Committee.[3] Nearly one thousand people have received this inoculation, and reactions appear as a rule to be mild or almost completely absent. It is as yet too early to judge of the efficacy of this procedure.

[1] THE LANCET, 1918, ii., 104.

INFLUENZAL INTRA-ABDOMINAL CATASTROPHES.

BY REGINALD ECCLES SMITH, M.B., F.R.C.S. EDIN.,
LATE TEMPORARY SURGEON, R.N., ROYAL NAVAL HOSPITAL, PLYMOUTH.

DURING the recent epidemic of influenza which has passed along through the hospital in three successive waves from June to December, several important abdominal complications have been observed. They may be divided into three classes, comprising those directly due to a specific bacillus, those to associated toxæmia, and those which are coincident and noted as a warning to the surgeon.

Simulation of Severe Abdominal Lesion by Influenzal Lung Complications.

In the earlier days cases were being constantly sent in to the surgical section with the diagnosis of perforated gastric or duodenal ulcer, less frequently as an acute appendicitis, and this latter mainly on account of the youth of the patient rather than from minute clinical observation, and even as empyema of the gall-bladder. The onset has in almost all cases been sudden. The patient has come in with a history of malaise for a short period followed by acute generalised pain in the abdomen, associated with generalised rigidity, often vomiting, a temperature raised two or three points above normal, and a running pulse.

In a number of such cases there have been no clinical signs in the chest to lead to a definite diagnosis, and hints of diaphragmatic pleurisy have been hesitatingly offered. Careful observation has shown that the rigidity and the pain in these pseudo-abdominal lesions are not absolute, but in most cases are referred to the upper zone of the abdomen, and in a minority to the lower zone, including the right iliac fossa. The pain and rigidity in the upper zone are referred along the eighth, ninth, and tenth intercostal nerves and when traced are much more severe on that side of the abdomen which corresponds to the chest lesion either definitely present or appearing later. On two occasions I blocked the eighth and ninth intercostal nerves in a supposed upper abdominal catastrophe and the symptoms disappeared. Less frequently the eleventh and twelfth intercostal nerves have caused the referred pain and a perforated appendix has been very closely simulated, especially as no other physical signs could be found anywhere.

The true diagnosis is often difficult, especially as true abdominal complications can arise either directly or coincidently, for which the physician and surgeon must always be on the alert. Apart from the knowledge that a devastating epidemic is abroad in which chest lesions are common and therefore kept in the surgeon's mind, three valuable points have been observed in the influenzal pseudo-abdominal catastrophe which differ from the true surgical abdominal lesion. These points may not, of course, hold good in a superimposed surgical lesion due to and grafted on to the original influenzal infection.

(*a*) The movement of the alæ nasi. In cases of influenza with acute abdominal pain, even when no physical signs

[2] THE LANCET, 1918, ii., 699. [3] THE LANCET, 1918, ii., 565.

have appeared in the lungs and the respirations are only slightly increased, if the alæ nasi are working the condition is never abdominal. In only occurs in late true abdominal lesions when general peritonitis is well advanced. The movement of the alæ nasi may not be very marked when the patient is recumbent, but can be elicited with a little exertion.

(*b*) Dullness in the flanks is never present in influenzal pseudo-catastrophes except in Class A where it is an early sign.

(*c*) The facies of the influenzal victim[1] dominates the scene. The anxious, terror-stricken look of the true abdominal lesion is not present as a rule. The anxiety is more lethargic and resigned, and of the medical rather than the surgical type.

In some cases an unusually high temperature associated with acute abdominal pain should be regarded with suspicion by the surgeon.

Acute Abdominal Catastrophes.

The true types of acute abdominal catastrophes associated with influenza which have come under my notice may be divided into three classes.

Class A includes infections of the general peritoneal cavity by organisms associated with the influenza epidemic. The infecting agent has always been the streptococcus, and, as far as can be stated, it is a blood-borne or embolic lesion and takes the form of an acute streptococcic general peritonitis. The following is an illustrative case:—

Patient, aged 26, had been treated for typical influenza for a fortnight before admission. He had recovered from the acute stage and the temperature had not quite settled until Oct. 2nd. He was then seized with acute pain in the upper abdomen, with vomiting, and a temperature suddenly raised to 104° F., the pulse being 120. On admission on Oct. 2nd the pain was generalised throughout the abdomen, which was markedly rigid; marked dullness in both flanks. The evidence in the chest suggested a resolving consolidation at the right base. The alæ nasi were working vigorously. On Oct. 3rd the picture remained as above, with the addition of beginning abdominal distension.

Operation: Para median incision opposite the umbilicus. A quantity of sero-purulent fluid escaped. The whole of the viscera was acutely inflamed and the kidney pouches full of the fluid. No organic lesion of any viscus could be discovered. Free drainage established. The fluid revealed a pure culture of streptococcus. Death ensued on Oct. 4th.

Class B.—The following case is an example of acute toxæmic dilatation of the stomach.

Patient, aged 26, was admitted to the sick list on June 26th with a typical history, symptoms, and signs of influenza. Admitted to hospital on June 28th. It was then noted that he was of the types associated with marked toxæmia. On June 29th he complained of acute pain of a colicky nature in the abdomen; this was at once complicated by occasional vomiting of fair quantities of stomach content. On June 30th the vomiting became persistent, the quantities increased, and diarrhœa was added. The temperature dropped to subnormal; condition of profound toxæmia. The physical signs in the abdomen were exceedingly slight, and with the extreme poorness of the general condition did not justify surgical interference. At night the abdomen became distended generally and rigid, and dullness in the upper zone replaced the usual tympanicity. Diagnosis was made of acute intestinal obstruction, but no laparotomy was performed owing to rapid failure of the pulse, and he died the same night.

Post-mortem.—Lungs: Some patchiness and infiltration at the bases suggested a recovering broncho-pneumonia. Kidneys and liver: Cloudy swelling of an acute toxæmia. Stomach: Enormously enlarged and contained about 5 pints of non-offensive, stagnation stomach content, together with some altered blood. Numerous petechial hæmorrhages were seen in the mucous membrane. No organic obstruction was found.

In view of my later experience I think the following case would probably have gone on to the type of the later fatal cases had not care and discretion of diet been observed.

Patient, aged 25, U.S. Navy, was admitted on August 15th with a history of having been "off colour" for several days before going sick. On the morning of the 15th he was suddenly seized with acute pain in the upper abdomen, severe enough to require his being carried to bed. No vomiting occurred, and after the reaction following collapse the pain became generalised. He was sent to hospital after eight hours and was then admitted with a diagnosis of acute perforation of the stomach. On admission T. 101·5° F., P. 115, R. 24. On examination the first noticeable point was vigorous action of the alæ nasi. The whole abdomen was rigid and fixed and apparently tender to palpation. No physical signs could be found in the chest. The liver dullness was completely obliterated and there was dullness in the right flank. A slight history of prior gastric mischief made it advisable with the above signs to explore the abdomen. The movements of the alæ nasi were marked, but insufficient to justify waiting for the possible development of signs in the chest.

Operation.—Abdomen opened in the usual manner. No gas or free fluid detected. The stomach rose from the abdomen like a balloon and the liver dullness at once reappeared. No organic lesion could be found. The stomach was massaged and emptied of its gas three or four times. Hot saline was applied and pituitrin injected into the arm. The abdomen was closed and patient returned to the ward. Pituitrin and atropine were continued and the feeds by mouth carefully restricted. After five days of typical influenzal chart and symptoms the patient recovered, no signs appearing to examination in the chest.

Surgeon Commander F. Bolton reported to me a case similar to the above, with recovery. Surgeon Lieutenant R. Carey had a death from influenza, with acute dilatation of the stomach, but I am unable to find the completed notes.

Class C.—In this class are placed coincident acute abdominal lesions occurring in the influenzal attack or during convalescence.

Patient, aged 16, was admitted on Sept. 15th, 1918, in a semi-conscious condition with the virulent form of influenza. The next day the condition was slightly improved and patient more alive to his surroundings. He had consolidation at the right base without any fluid in the pleura. The sputum contained streptococci and the influenza bacillus. On Sept. 18th he complained of acute pain in the lower abdomen especially located in the right iliac fossa. Operation was deferred by the surgeon consulted owing to the possibility of a pseudo-catastrophe arising from referred chest pain. On Sept. 19th the condition remained the same until 3 P.M., when he was seized with further acute pain in the abdomen. The rectal examination suggested a pelvic appendix, and the further pain a ruptured appendix with early general peritonitis. I advised immediate surgical interference in spite of the chest lesion and general condition.

Operation.—Battle's incision. A large gangrenous appendix which had perforated was found in the pelvis. Early general peritonitis was noted. Appendicectomy was carried out and the pelvis and right kidney pouch were drained and abdomen closed. (*B. coli* found in culture; no streptococci noted.)

On Sept. 23rd the left lung became consolidated although the abdomen was satisfactory. On Sept. 25th the patient's condition was almost hopeless from general influenzal toxæmia and consolidation of both lungs. However, by Oct. 15th there was complete resolution of both lungs and patient made an uninterrupted recovery. He was discharged on Dec. 30th, 1918.

In one case a condition of long-standing tubercular peritonitis found, with much matting of the small bowel. A large encysted collection of pus was found between adjacent coils of the ileum. Death ensued. The case is of interest because of the possible lighting up of an old encysted collection by a recent organism.

Conclusions and Observations.

1. That during the present epidemic of influenza the chest should become more the province of the surgeon than is usual and should be minutely searched for any physical signs when a suspected abdominal lesion arises.

2. The three points I have already put forward will be found of great assistance in such cases, and may save a laparotomy in a patient who is already not in good condition.

3. The infection of the peritoneum is blood borne and is not due to direct extension through the diaphragmatic lymphatics. Streptococcic endocarditis is a jumping off ground for peritoneal infection, but is not necessarily always present.

4. Surgical interference so far has been of no avail, but it is not surprising when one studies the mortality in the present epidemic, in which as yet intra-abdominal lesions have not been recorded.

5 Discretion in dietary is very necessary in the toxæmic types, as an overloaded stomach may become a danger.

6. Persistent vomiting in cases of influenzal toxæmia should be regarded with suspicion. Although the evidence is as yet small, the condition of acute dilatation is proved, hence early stomach washing and the use of pituitrin may save a patient where a *laissez faire* attitude will certainly end in death.

7. The incidence of true abdominal catastrophes in a patient with influenza must always be kept in mind and suitable measures promptly undertaken.

[1] THE LANCET, 1919, i., 1.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON

THE USE OF INTRAVENOUS IODINE IN INFLUENZAL BRONCHO-PNEUMONIA.

BY D. M. BAILLIE, M.D. ABERD., D.P.H. LOND.,
CAPTAIN, R.A.M.C.; PATHOLOGIST, MILITARY HOSPITAL, WARLINGHAM.

THE idea of using tincture of iodine intravenously was suggested to me by Major S. M Cox, R.A.M.C., Chinese Hospital, Moulle. While I was pathologist to No. 4 Stationary Hospital, France, I had been struck by the apparent futility of ordinary routine treatment for bad cases of influenzal pneumonia, and by the fact that many of these cases were septicæmic in type with comparatively limited involvement of the lungs, evidenced by extreme toxicity and cyanosis with comparatively few physical signs in the chest. This latter conclusion was confirmed by the cultivation in many cases of pneumococci from the blood stream. It seemed to me, therefore, that intravenous administration of iodine would be a rational method of treatment.

The B.P. tincture was used in doses of from 20–30 minims (22 m. = ½ gr. of iodine). This was diluted with 9 c.cm. of a 0·85 per cent. solution of salt in freshly distilled water and given into a vein at the bend of the elbow in the same fashion as a neokharsivan injection. This was preferably given in the morning, repeated next day, and if necessary the day after.

Ten bad cases with definite signs of broncho-pneumonia were treated. Of these nine recovered and one died; the latter, in addition to pneumonia, had severe purulent bronchitis for a week before being treated. The drug was tolerated very well, and there were no untoward symptoms except that two patients had a rigor about an hour after the first injection (one of these gave a history of seven attacks of malaria), and another case developed a typical iodine rash. This man had a dose of ♏ xx. on two successive days, and a final dose of ♏ xx. after an interval of four days. The rash appeared on the day after the last dose, but rapidly cleared up in the course of a few days.

The therapeutic effect of the iodine was generally shown within 24 hours by a marked fall in the pulse-rate and temperature (the latter resembling a crisis) and a marked change for the better on the part of the patient. The temperature remained normal except, usually, for a slight rise on the evening of the first or second day after. The tongue cleaned rapidly, but the physical signs in the chest cleared up more slowly. The presence of albuminuria was no contra-indication as to the use of iodine; dense albuminuria in one case cleared up two days after the first dose.

It is highly improbable that the iodine given thus into the blood stream has any direct bactericidal action; the dilution is too high. It is feasible, however, to think that it may have an inhibitory effect on the reproduction of the organisms, at any rate in the blood stream. Taking the total quantity of blood in the circulation as 12 pints, a half-grain dose of iodine would represent a dilution of roughly 230,000. It may, perhaps, be feasible to suggest that the organisms in the act of cell-division would be vulnerable to a solution of that strength.

However, it is impossible and quite unjustifiable to draw conclusions from a series of so few cases, but circumstances at the time prevented me from going on with this line of work. I can say, however, that I was much impressed by the way in which these cases reacted to the iodine. The only excuse I have in publishing this is the hope that some members of the profession will take the method up and try it out fully.

I would like to take this opportunity of thanking Lieut.-Colonel E. T. Inkson, V.C., D.S.O., R.A.M.C., O.C. 4 Stationary Hospital, for his unfailing courtesy and kindness.

A CASE OF

SPONTANEOUS RUPTURE OF AN OVARIAN CYST.

BY D. N. KALYANVALA, M.R.C.S. ENG.,
ASSISTANT MEDICAL SUPERINTENDENT, CHELSEA INFIRMARY, LONDON.

SPONTANEOUS rupture of an ovarian cyst is distinctly rare, but was evidently due in this case to the softening of the cyst wall, the actual exciting cause being in all probability an act of coughing. In view of the quantity of effused blood found at the operation the absence of any clinical sign of intra-abdominal hæmorrhage is interesting.

Mrs. A. B., aged 61, was admitted with the diagnosis of ovarian cyst for operation. There was a history of abdominal enlargement of four months' duration, with increasing dyspnœa. The lower abdomen was found occupied by a median swelling, obviously an ovarian or parovarian cyst; circumference round biggest diameter 47½ inches. As there was some bronchitis with slight pyrexia, operation was postponed for a week; the condition rapidly improved. No change in the signs or symptoms of the tumour was noted; no pain or faintness.

At the operation it was evident that the contour of the abdomen had changed, and on opening the abdominal cavity there was a gush of blood-stained cystic fluid containing large clots. After sponging this away a vertical tear 4 by ¼ inches was found in anterior cyst wall. It was a unilocular cyst the size of a football, and firmly adherent to the omentum and numerous coils of intestine, and was fixed deeply in the pelvis by adhesion to the rectum. The cyst wall, soft and pulpy, was with difficulty separated from the adjoining structures. It was found to be growing from the left side by a short pedicle which had not undergone torsion. The whole cyst was removed, together with both Fallopian tubes to which it was adherent. The peritoneal cavity was swabbed dry; large drainage-tube inserted for 48 hours. Uninterrupted recovery followed and the patient was quite well when seen ten months later.

Sections of the cyst were examined by Dr. Knyvett Gordon, of the Virol Research Laboratories, who reported as follows: "The specimen is a good example of a cyst-adenoma pseudo-mucinosum. No evidence of malignancy was found."

It is probable that the rupture took place during the two days between my last inspection of the abdomen and the operation. Owing to the high intra-abdominal pressure the cyst was partially compressed against the abdominal wall and sudden evacuation of fluid prevented. As the contents were neither purulent nor gelatinous peritonitis did not develop.

A CASE OF

NYSTAGMUS CAUSED BY MUSTARD GAS.

BY R. P. RATNAKAR, D.CH.O. LIVERP.,
RESIDENT SURGICAL OFFICER, MANCHESTER ROYAL EYE HOSPITAL.

AS I have not yet noticed in the medical press any case of nystagmus occurring as a result of mustard gas poisoning I think the following case worthy of record.

A man, aged 25, came to Dr. A. Hill Griffith as an out-patient in September, 1917. He had served in the Army since the beginning of the war as a signaller and was gassed on July 31st, 1917. He said that he could not see or open his eyes for two days, but after that he could gradually open his eyes and could see fairly well. About a fortnight after he was gassed his attention was drawn to the oscillations of his eyeballs, as the patient described the condition, by the medical man at the military hospital to which he was removed. Patient was a microphotographer at one of the largest hospitals in London before he joined up. His vision was excellent, and he had no nystagmus then; there is no reason to doubt his statement considering his work before and after joining the Army. On examination the condition was as follows:—Nature of nystagmus lateral. Pupils regular, active, medium. Movement of the eyeballs, conjunctiva, cornea, and media normal. The fundi were also normal. Nystagmus constantly present, but more marked on extreme outward and inward movements. Vision in both eyes 6/18 partly, not improved by glasses. Letters run into one another. Retinoscopy after a mydriatic: R. and L. + 1 sph. Fields of vision and colour perception normal; no central scotoma. The patient came to the hospital for re-examination after three months as directed, and the condition was found to be practically the same.

Dr. Hill Griffith had previously seen two cases of nystagmus after mustard gas poisoning, but being sceptical

of the patient's statements that their eyes were normal before they were gassed he did not take any notes, and the patients never came for re-examination. But this third case was so definite that he asked me to take notes of the case. I am greatly indebted to Dr. Hill Griffith for permitting me to report this interesting case.

Medical Societies.

TUBERCULOSIS SOCIETY.

The Treatment of Tuberculous Glands.

A MEETING of this society was held at the Royal Society of Medicine on Feb. 24th, Dr. HALLIDAY SUTHERLAND, the President, being in the chair.

Dr. H. DE CARLE WOODCOCK, senior tuberculosis officer, Leeds, gave an address upon the treatment of tuberculous glands. He devoted his early remarks to some of the recent work by pathologists upon the different types of the tubercle bacillus, especially the types found in different lesions, in the several age-periods of life, and the possibility of the transmutation of the bovine into the human type. Bovine tuberculosis, so frequent in childhood, he said, is practically not found after the sixteenth year, the human type being responsible for the adult disease. He considered that as bovine disease tended to run a mild course and eventually to die out, it acted as a form of inoculation, protecting the individual against infection with the human type in later life.

In an examination of a large number of elementary school children in Leeds he found 25 per cent. with tuberculous glands, in Edinburgh 33 per cent. had been found, which he thought was probably accounted for by the higher incidence of bovine disease in that city. Of the children sent to the dispensaries as selected cases nearly all had tuberculous glands. The practice of removing all enlarged tonsils and adenoids he thought was not justified and should be limited to those cases where there is definite injury to the associated glands and the general health. He was strongly opposed to the surgical removal of tuberculous glands, in the first place, because with treatment most cases healed spontaneously, and, secondly, because of the danger of opening up fresh channels of infection and causing miliary disease. He advocated aspiration in cases with large masses of glands and injections of the following mixture:—

Oil of Peppermint	mi.
Ether	mv.
Spirit	mvi.

used undiluted in adults, and with an equal part of saline in children. This was useful in cases where softening had begun and was found most satisfactory. He had also practised multiple puncture with the galvano-cautery with favourable results.

In conclusion, Dr. Woodcock spoke highly of the value of tuberculin, which approached the position of a "specific," and was followed by a reduction in the size of the glands. Tuberculin was not to be used when chest disease was also present, as this tended to become worse.

At the next meeting of the Tuberculosis Society, on March 24th, 8.30 P.M., Sir William Osler will give an address on Acute Pneumonic Tuberculosis.

SOCIÉTÉ DE BIOLOGIE, PARIS.—The following is a summary of some of the papers read at the meetings of this society held on Feb. 22nd and March 1st.

Bossan et Guieysse-Pellissier.—Penetrating Power of Tracheal Injections.

Les auteurs ont fait des recherches sur la pénétration d'une substance médicamenteuse dans le poumon sain ou tuberculeux par injection trachéale. Sur des lapins sains ou tuberculeux, une substance médicamenteuse dissoute dans de l'huile est injectée dans la trachée. L'huile est recherchée sur des coupes après action de l'acide osmique. Chez le lapin sain, l'huile se répand dans toute la hauteur du poumon et peut être retrouvée dans les alvéoles six heures après. Chez le lapin tuberculeux, on la retrouve dans l'intérieur des nodules et des cavernes.

P. Brodin, G. Loiseau, et F. Saint Girons.—Relative Antitoxic Power of Plasma and Serum.

Des recherches effectuées par les auteurs sur le sang de 8 chevaux tétaniques et 2 chevaux antidiphtériques, il résulte que sérum et plasma ont exactement le même pouvoir antitoxique. Des recherches parallèles faites à leur demande par M. Nicolle sur le sang de chevaux immunisés contre le pneumocoque ont montré que sérum et plasma ont également le même pouvoir agglutinant.

E. Weill et G. Mouriquand.—Antiscorbutic Substances in Germinating Barley.

Les auteurs ont fait des recherches sur le moment d'apparition de la substance antiscorbutique et sur les accidents provoqués chez le cobaye par les grains d'orge aux différents stades de leur germination. Les auteurs montrent: (1) Que les grains d'orge germés 3 jours sont scorbutiques. (2) Que l'herbe d'orge germée 10 jours entraine une mort brusque ou rapide. (3) Que l'association de graines germées 3 jours à l'herbe de graine germée 10 jours, permet une excellente nutrition du cobaye.

A. Benoit.—The Daily Ration of Nitrogen.

L'auteur a eu l'occasion d'observer quantitativement le régime strict d'un camp d'officiers russes prisonniers en Allemagne. Avec 1700 calories et 7 à 8 grammes d'azote par jour, la santé et l'activité se sont maintenues malgré un amaigrissement notable. La proportion d'acides aminés était conforme aux nécessités physiologiques connues.

Madsen.—Phagocytosis.

La vitesse de réaction de la phagocytose suit la loi des réactions bimoléculaires. Les relations entre la vitesse de réaction de la phagocytose et la température suivent les lois de Vant'Hoff-Arrhénius. La phagocytose a un maximum, dépendant de la température de l'organisme qui a fourni les phagocytes.

SOCIÉTÉ DE THÉRAPEUTIQUE, PARIS.—At a meeting of this society held on Dec. 11th, 1918, Dr. J. Laumonier reported a case of Typhoid Fever Treated by Colloidal Iron. 5 c.cm. were injected intravenously every three days, each c.cm. containing 1 mg. of pure iron. Six injections were given in all. The treatment appeared to have a moderating effect upon the fever and to prevent the occurrence of anæmia and leucopenia usually present in typhoid.—Dr. L. Rénon and Dr. R. Mignot read a note on the Inefficacy of Injections of Saccharose in Human and Experimental Tuberculosis. A solution containing 5 g. of saccharose and 2 cg. of novocain was injected subcutaneously or intramuscularly in cases of pulmonary or surgical tuberculosis without the slightest improvement being observed after 30 to 40 days' treatment. Saccharose was also injected into guinea-pigs previously infected with tuberculosis, but the course of the disease was not affected, and one of them even died before the controls.—In a paper on the Treatment of Influenza and Infectious Diseases in General by Lymphotherapy and Hæmatotherapy Dr. S. Artault de Vevey stated that lymphotherapy consisted in producing a bulla by any blistering agent and injecting 5 to 6 c.cm. into the patient's shoulder or buttock. As this process was not very rapid, and as sometimes the patient's skin was refractory to blistering agents, in cases where a blister did not form at the end of 10 hours the speaker had been in the habit of removing 10 to 15 c.cm. of blood and re-injecting it at once. To prevent clotting 2 to 3 c.cm. of a 10 per cent. solution of sodium citrate was first drawn into the syringe. This operation of hæmatotherapy was easy in the adult, whereas in the child lymphotherapy was the best method. Within a few hours of the injection of serum or blood the patient feels considerable relief; in the simple and abdominal forms the temperature becomes normal in 10 to 12 hours; and in patients with nervous complications or broncho-pneumonia in 36 to 48 hours.—Dr. A. Challamel read a note on Hypodermic Injections of Eucalyptus Oil in the Present Epidemic of Influenza. During the last few months he had been treating soldiers poisoned by mustard gas with hypodermic injections of eucalyptus oil (1 in 10) in doses of 2 c.cm. morning and evening. The treatment was started before any signs appeared in the lungs with the object of introducing an antiseptic into the finest ramifications of the bronchi. Eucalyptol was chosen owing to its proved value in the prophylaxis of contagious diseases. The success obtained in this class of case encouraged the speaker to adopt the same treatment in influenza with equally satisfactory results.

LITERARY INTELLIGENCE.—Messrs. P. Blakiston's Son and Co., of Philadelphia, announce a revised edition of Stitt's Diagnostics and Treatment of Tropical Diseases.

PRESENTATIONS TO MEDICAL MEN.—Mr. Scott Riddell, M.V.O., C.B.E., who has retired after 27 years' service for the Aberdeen Royal Infirmary, having been for 20 years full surgeon in charge of the wards, was on Feb. 12th presented on behalf of the medical staff with an illuminated address.—Mr. Lockhart Stephens, medical officer of health for Warblington and county director for Hampshire British Red Cross Society and Order of St. John, has received from his colleagues of the auxiliary hospitals in the county an illuminated address on the occasion of his retirement from the post of county director. Mr. Stephens was one of the early pioneers of the county association movement, with which he had been connected since 1909.

Reviews and Notices of Books.

The History of St. Bartholomew's Hospital. By NORMAN MOORE, M.D.Camb., F.R.C.P. Lond. London: C. Arthur Pearson, Ltd. 1918. In two volumes. Vol. I.: Pp. 614; Vol. II.: Pp. 886 and Index, 106. £3 3s. net.

A well-known passage of Virgil runs:—

Venisti tandem .....
Vicit iter durum pietas!

And we learn from Dr. Moore's preface that the work has taken some 30 years to bring to completion. The journey must, indeed, have been laborious, but every page is a witness to the tried and worthy reverence which the learned author feels towards the ancient and holy house of which he has been for many years so faithful a servant.

To write an accurate chronicle of the history of a corporate body which has existed for close upon 800 years is no easy task, but St. Bartholomew's Hospital has fortunately been able to preserve a very large number of its charters and other documents, either the original documents themselves or copies made in the year 1456 by John Cok, who became a Brother of the Hospital in 1421 and wrote a Rental or Cartulary of the Hospital. The last entry is dated 1468, so giving the record of the hospital down to the early years of Edward IV. Other original charters dealing with the business of the hospital are preserved in St. Paul's Cathedral, the Record Office, the British Museum, and Wells Cathedral. Dr. Moore has printed 234 charters in full, and given abstracts of over 270, in all cases with the names of the witnesses. Other sources of information are the Liber Fundacionis of the hospital, various notes by John Cok, and the Bishop's Register kept in Dean's-yard, St. Paul's. For later centuries the authorities are the Letters Patent of Henry VIII. for 1544 and 1547, together with the manuscript journals, ledgers, and Repertory Book, and the printed "Order" of the hospital. It may be seen from this recital that the information contained in the work has all been garnered from official and accurate sources so as to form an unimpeachable record of the hospital.

And how vivid a picture of the life of bygone times is here presented. In the first chapter we have an account of Smithfield "in the suburb of London" as it appeared in Fitz Stephen's time. He was the biographer of Thomas Becket, Archbishop of Canterbury, afterwards St. Thomas of Canterbury, and wrote an account of London as a prologue to the biography. Smithfield was then an open swampy place where cattle and horses were sold. Becket was murdered in 1170, so the hospital and priory had been founded some 50 years when Fitz Stephen wrote. At the time of the foundation Smithfield was anything but a desirable residential neighbourhood. It was marshy and wet, and the only habitation, if we may so call it, was the public gallows; the site, indeed, is a perpetual rebuke to that school of controversialists who maintain that the religious orders always sought out the pleasant places of the earth for their monasteries. Such persons think of Tintern and Beaulieu, forgetting the Grand Chartreuse and the Hospice of St. Bernard.

The story of the foundation of the hospital and priory is to be found in the Liber Fundacionis written by one of the Augustinian canons of the priory between 1174 and 1189, who gives an account of Rahere, of his early life, his conversion and journey to Rome, his illness and his vow to found a hospital, should God grant him recovery and return to his own country. He did recover, and on his way home had his vision of St. Bartholomew commanding him to found a church in Smithfield. On arriving in London he at once set about a twin works of piety; land was granted by the king, and the hospital and priory were commenced simultaneously in the year 1123. Rahere being the founder, Richard de Belmeis, Bishop of London, a warm supporter, and Henry I. giving the land. The hospital was built on the execution ground, being the highest part of Smithfield and having a gravel subsoil, the church and priory a little to the north of the hospital. The latter corporation owed certain duties to the priory, but had its own chapter and its own separate seal and administration. The original staff of the hospital was eight brethren and four sisters, observing the rule of St. Augustine. Rahere died in 1145 and within a year of his death Thomas, a canon of St. Osyth, was elected prior. Under his rule the number of canons was increased from 13 to 35 and improvements were made in the hospital. He also obtained a charter from the Archbishop of Canterbury, giving confirmation of all rights and privileges granted by Henry I. Thomas the Prior died in 1174, at the age of nearly 100. Early in the reign of Richard I. Henry Fitz-Ailwin became Mayor of London and held office until his death in 1212. He was a generous benefactor of the hospital, as were many others of his contemporaries. Among the many charters of this period which survive there is one of particular interest: it is a *chirograph*, both parts of which are preserved, and sets forth that Stephen, the procurator of the hospital, granted to William, son of Simon of Rainham, certain land in the vill of Rainham, which he was to farm on condition of delivering to the hospital every year five quarters respectively of wheat, rye, barley, and beans; also eight quarters of oats and four cartloads of hay. Such was the rent; in return for it William and his heirs were confirmed in the use of the land, arable meadows, pastures, roads, paths, waters, gardens and brushwood, and all things without any reservation, including a house with two bedrooms, stalls for cattle and horses, a barn, a brew-house, an oven, and a fowl-house. The hospital gave William 10 marks of silver towards paying his debts and William gave 1 silver mark "*in gersumam*" for confirmation of the charter. The whole charter, the text of which is given in full at p. 240 of Vol. I., gives a most interesting picture of an Essex farm in the twelfth century, and shows that a religious house was not afraid to advance money to a good tenant.

It may be as well to explain the meaning of two terms mentioned above—namely, *chirograph* and *gersuma*. The former is the technical term for a charter or agreement, written in duplicate upon one piece of parchment. The two copies were written head to head or side by side and in the interspace was written in large letters the word "chirographum." The parchment was cut through this word longitudinally, and one party kept one half and the other the other, both parties thus having a complete copy of the charter and also a test of the authenticity of their copies. Sometimes the line of division was made wavy or indented; hence the term "indenture." "Gersuma" was a payment on the conclusion of a transaction paid by the beneficiary. It varied according to the magnitude of the transaction and the richness of the beneficiary. Thus in the time of Master Adam, 1147–1168, the hospital received an important addition of land and gave the donors three talents of gold "in gersumam," while in a charter written by William de Ripa, chaplain of the hospital in the reign of Henry III., Everard the cutler was granted by Ralph of Frowic, the goldsmith, some land for which he paid seven shillings per annum, and Everard gave Ralph one pound of pepper "in gersumam."

As the years went by both hospital and priory continued in good works and were enriched by the offerings of the faithful until the great spoliation by Henry VIII. In 1536 priory and hospital were dissolved, and in 1537 the hospital property was given into the King's hands. So many were the sick turned loose into the streets owing to the dissolution of St. Bartholomew's and other hospitals that in 1538 the Mayor, aldermen, and commons of London presented a petition to the King that sundry hospitals and the buildings of other foundations might be handed over to them to be applied to religious and charitable uses. As regards St. Bartholomew's, this petition was granted in 1544, and in 1547 a new charter was granted drawing up a constitution for the hospital in all essentials the same as that existing to-day.

We have dwelt particularly upon the earlier parts of Dr. Moore's interesting work, but it is throughout permeated with the same scholarship and picturesque knowledge. The history of the hospital from the new foundation onwards is drawn from the ledgers, the repertory, and the journals of the house. A chapter is devoted to that famous son of Cambridge, Dr. Caius, who lived in the hospital from 1547 until his death in 1573, and another to Harvey, who was elected physician in 1609. Other chapters deal with the successors of Harvey, with the surgeons, beginning with those of the Old Guild, with the apothecaries and other members of the staff, with the nursing staff, the officials, the administrators, the school, the buildings, and, finally, with the patients.

So ends Dr. Moore's labour of love, a free gift by him to that body for which he has laboured faithfully for many

years; and the gift is in every way worthy of the recipient. Only a portion of Rahere's church still stands, and not one stone of the hospital as he built it exists. But the present buildings are on the identical site of 1123, and for nearly 800 years the hospital has been a place of which we may surely say, "sedentibus in regione mortis, lux orta est eis."

H. P. C.

Vaccines and Sera: Their Clinical Value in Military and Civilian Practice. By A. GEOFFREY SHERA, B.A., M.D., B.C. Camb., Clinical Pathologist to the British Red Cross Hospital, Netley. With an Introduction by Sir CLIFFORD ALLBUTT. Oxford War Primers. London: Henry Frowde and Hodder and Stoughton. 1918. Pp. 226. 7*s.* 6*d.*

Sir Clifford Allbutt, whose aim in writing an introductory note to Dr. Shera's book is to bring together the bacteriologist and the medical practitioner, has elsewhere described clinical pathology as the physician's handicraft. We find Dr. Shera an able and stimulating guide to one section, and that a very important one, of this handicraft. The day, he says, is passing when you either believe in specific therapy or you do not. We hope so, and the passing is likely to be accelerated by such a frank exposition as the author's. Specific therapy, he admits, is in parlous danger of being discredited owing to four deadly sins on the part of pathologists. These are: (1) undue optimism, due to a lack of perspective; (2) incoherence; (3) intolerance of the views of others; (4) commercial exploitation. We doubt ourselves whether the fault is "solely due" to the pathologists themselves, for what about the blind faith of the practitioner in a report which he does not always take the trouble to understand? Even now there are some who avail themselves of the help of clinical pathology who have never thought out the different importance of a positive and a negative result. The very object for which he asks the pathologist to search may be absent solely because the material has not been properly handled by the clinician.

After a pleasant autobiographical chapter on the present position of specific therapy the author goes on to discuss in turn vaccines—their preparation, administration, and use in various disease groups; sera, giving special attention to anaphylaxis and the special case of filter-passing viruses; specific therapy as applied to the special diseases of women and of children; and, finally, some miscellaneous topics, such as the use of normal and "auto-" serum. Three useful sections, including résumé, glossary, and references, complete the volume.

Dr. Shera states his individual experience throughout, and in a subject which bristles with controversial points many will disagree with him, some in one direction, some in another. In the treatment of gunshot wounds he considers the case for therapeutic vaccines to be overwhelming, quoting a series of 25 consecutive cases in which autogenous vaccine was used, leaving the reader to draw his own conclusion. "Controls," he submits, are unnecessary, as "any military surgeon can form an opinion as to the average duration of treatment of his cases." He enunciates the "curious fact" that the presence of sequestra in a sinus can almost be diagnosed by the way in which the patient reacts to vaccines. The statistician irks him; no two cases, he says, are alike and percentages are therefore "out of place." Sometimes he may be frankly hoist with his own petard. Endotoxins, he says, demand vaccines, but in tuberculosis the typical endotoxic disease, he will have none of the only vaccine available—namely, tuberculin. Conviction, however, as the author reminds us, comes of experience, and Dr. Shera's only experience of tuberculin appears to be in the published writings of Dr. Batty Shaw.

We have said enough to indicate that this little war primer is a useful contribution to a vital subject and we hope enough to induce our readers to study it carefully.

An Enquiry into the Medical Curriculum by the Edinburgh Pathological Club has now been reprinted from the *Edinburgh Medical Journal*, the expenses of issuing it having been defrayed by a grant from the Carnegie Trust for the Universities of Scotland. As we have dealt at length with many of the valuable contributions to the Enquiry at the time of their appearance, we need not do more than call attention to their appearance in handsome book form, and to the summary of concrete proposals at the end of the volume, which is now indexed. The reprint and the report on the curriculum separately may be obtained on application to Dr. H. M. Traquair, 16, Manor-place, Edinburgh.

JOURNALS.

Parasitology. Edited by G. H. F. NUTTALL, F.R.S., assisted by EDWARD HINDLE, Ph.D. Vol. XI. No. 1. November, 1918. Cambridge University Press. 12*s.* 6*d.* net. (Yearly subscription, £1 15*s.*)—*Spirochæta icterohæmorrhagiæ* in the Common Rat in England, with remarks on the minute structure of these leptospira (Noguchi), by Alfred C. Coles, comprises the results of an examination of rats in the neighbourhood of Bournemouth to see if spirochætes could be found. The kidneys of 100 rats were examined and 9 of them contained a spirochæte morphologically identical with the *S. icterohæmorrhagiæ* of the guinea-pig.[1] The question naturally suggests itself: Does so-called "Weil's disease," or "infective jaundice" occur in England? In addition, one of the rats contained another species, which there is little doubt may be the spirochæte of rat-bite fever, *S. morsus muris*. —The Biology of *Amblyomma dissimile* Koch, by G. E. Bodkin, contains a description of methods of rearing this tick which occurs parasitic on the bull-frog in British Guiana. The life-history is described in detail, together with the longevity of the various stages. The total life-cycle takes roughly 153 days, assuming that each stage promptly finds a host. In addition, this species was found to be capable of reproducing parthenogenetically, and the author's results suggest that these parthenogenetic generations are entirely female. —*Lernæopoda scyllicola*, n.sp., a Parasitic Copepod of *Scyllium Canicula*, by W. Harold Leigh Sharpe, is a description of a new species of parasite from the dog fish, together with a detailed account of the male.—*Lernæopoda globosa*, n.sp., a Parasitic Copepod of *Scyllium Canicula*, by W. Harold Leigh-Sharpe, contains the description of another new species from the same host.—Trypanosomiasis of Camels in Russian Turkestan, by W. L. Yakimoff and others, is a lengthy account of camel trypanosomiasis from Bokhara, the Ural, and the Astrakhan regions. The trypanosome is described in detail and compared with the other pathogenic trypanosomes, from which it appears that it is very closely related to *T. evansi* of India. The writers then proceed to consider the various changes taking place in the blood of infected animals, and the article concludes with a short account of some therapeutical experiments, using mice infected with the virus from Bokhara camels.—Hibernation of Flies in a Lincolnshire House, by G. S. Graham-Smith, contains a record of the species of insects occurring in a house which had suffered from a plague of flies every autumn and winter for 24 years. The most numerous and troublesome fly was *Musca corvina; Limnophora septemnotata*, *Culex pipiens*, and a chalcid, *Stenomalus muscarum*, were also abundant.—Bilharziasis in Natal, by F. G. Cawston, is a description of the present state of our knowledge of this disease in Natal and the result of some personal observations extending over the last seven years. Bilharzia cercariæ, similar to those which cause bilharziasis in Egypt, were found in specimens of *Physopsis africana*, a snail which abounds in infected localities. The experimental infection of animals was unsuccessful, in spite of numerous attempts to infect rats, guinea-pigs, rabbits, &c. The writer states that it is rare to come across a person whose life has been shortened, or whose death has been caused, by the disease in Natal.—The Cercariæ of the Transvaal, by F. G. Cawston, contains a description of three new species of cercariæ found in various snails. The latter, when living in flowing rivers, are considerably less infected with trematodes than those occurring in stagnant pools, and in addition, the presence of lime seems to have an adverse effect on the parasites.—The structure of the Mouthparts and Mechanism of Feeding in *Pediculus humanus*, by A. D. Peacock, contains a detailed account of the structure of the head of this important human parasite, primarily undertaken with the idea of finding out through which channel the organisms of disease may find passage on the way from the insect to man. The article is illustrated by numerous diagrams, and in addition contains an account of the manner of feeding.—*Clavella sciatherica*, n.sp., a Parasitic Copepod of *Gadus morrhua*, by W. Harold Leigh-Sharpe, contains the description of a new species of the family lernæopodidæ, taken on a codling at Plymouth.

The *American Journal of Care for Cripples* becomes a monthly with its January issue, under the editorship of Dr. Douglas C. McMurtrie. Although dealing extensively with the rehabilitation of the invalided soldier, the journal is in no sense a war product, as it is now entering upon its eighth volume. It will contain in the future the studies, translations, and abstracts produced by the research department of the Red Cross Institute for Crippled and Disabled Men, which material has hitherto appeared in a special series of publications. The journal also continues as the official organ of the Federation of Associations for Cripples.

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[1] THE LANCET, 1918, i., 468.

THE LANCET.

LONDON: SATURDAY, MARCH 15, 1919.

The Rapid Cure of Hysterical Disabilities.

ONE of the many peculiarities of hysteria is that the methods in vogue for its treatment are almost as diverse as its clinical manifestations. While the suggestionist extols his technique as the method *par excellence* for hysterical cures, the psycho-analyst regards suggestion as a positive hindrance in the way of therapeutic success. There is also the hypnotist, who claims 90 per cent. cures, or over, by his particular ceremonial, and the faradic-battery expert, who gets 100 per cent. cures; there is the advocate of simple persuasion and re-education combined with manipulation, who, similarly, is disappointed if complete recovery does not occur at a single séance, measured often only in minutes. Meanwhile, it may be supposed, the psycho-analyst, accustomed to delving in the unconscious for months, not to say years, wonders what sort of "cures" these may be, as the man in the street may wonder at the apparent uselessness of all methods alike, when he reads in his morning paper that the hysterically mute soldier suddenly recovers, after two years' resistance to all therapeutic endeavour, because someone stands on his favourite corn in a crowded tramcar.

It would be easy to quote chapter and verse for the conflicting statements of these exponents of rival procedures who thus push their wares in the medical market-place; but the dissimilarities are more apparent than real. The essence of cures by hypnotism, electricity, laying on of hands, and what not, is the influencing of the patient's mind by the mind of another, call it what we will. Even in regard to psycho-analysis it is by no means clear that suggestion can be put out of court as a therapeutic factor; for that matter there is something almost painful in the determined effort of FERENCZI and others to reduce suggestion to a sexual phenomenon and to delete the word from the therapeutic vocabulary. No doubt the trouble lies in the variety of meanings attached to the word "cure." The suggestionist holds that disappearance of symptoms constitutes a cure, in hysteria above all diseases, since somehow the fact of this disappearance reacts, or seems to react, on the patient's mind in a salutary way, so that much more is thereby effected than mere symptomatological improvement; the soldier who recently recovered his speech at a cinema and who was heard to utter a heart-felt "Thank God, I can speak!" has surely undergone a more radical change than is implied in return of innervation in an isolated neural mechanism. If we bear in mind the fact that the vast majority of the war cases of hysteria are comparatively simple in type, relatively short in duration, not obscure in causation, and uncomplicated by elusiveness of unconscious motive, we can readily understand both the ease with which cases clear up in expert hands and the claim the operators make for permanence in results. We see no special reason to doubt the likelihood of the cures persisting, but the majority of those who have had much to do with civil cases in private and hospital practice will, we believe, be inclined to hold that not all cases can thus be summarily treated, or, at least, that the disappearance of a symptom or symptoms under the *force majeure* of persuasion does not necessarily entail a favourable modification of the underlying psychical basis of the affection. There are certain important varieties of the psycho-neurosis to which treatment by persuasion re-education, and manipulation does not appear to be specially applicable. Cases of hysterical fits, hysterical fugues, and alternating personality are among the more difficult and complex manifestations of the disease, and often call for the most persistent and painstaking treatment. To get at the underlying, the hidden, springs of the affection, to unmask the unconscious trends and motives perpetuating the clinical phenomena, to solve the apparently insoluble contradictions between the patient's overtly expressed desire to get better and his unconscious desire not to, is surely to reach a more permanent basis of cure. It is, perhaps, scarcely an exaggeration to say that hysterical cases, therapeutically considered, are either very easy or very difficult. When all is said, the chronic hysterical patient may resist every therapeutic endeavour, and, nursing infirmity to the end, defeat the physician by very feebleness.

One of the interesting questions aroused by a consideration of rapid cures in cases of some little duration is, How comes it that the nervous mechanisms are, as it were, ready to resume duty at a moment's notice—ready after, it may be, some years of disuse? The matter must not, of course, be taken too literally; experience shows there is commonly a period of awkwardness of use—e.g., in the case of hysterical paraplegia the patient usually requires an appreciable time to take up his bed and walk. But in other cases, say of aphonia, apparently no such interval of transition is necessary. In most cases there can be no doubt that unconscious or subconscious innervation keeps the mechanisms in working order; the hysterical paraplegic will draw up his legs in sleep. For other cases, possibly, no such explanation is quite feasible, though at least some hysterical aphonics and mutes are known to have muttered in their dreams. As permanently unconscious nerve mechanisms are kept in tone by proprioceptive stimuli, so may conscious mechanisms, deprived temporarily of the conscious element, be played on by automatic or involuntary processes arising from centres normally in abeyance. Be all this as it may, we must admit that in chronic cases active trophic changes may take place, from disuse mainly, handicapping full and

rapid restoration and necessitating physical as well as psychical treatment. Comparatively little attention has been directed to the actual physiological nature of the production of hysterical symptoms, although the late Dr. CHARLTON BASTIAN and the late Dr. T. D. SAVILL devoted much thought to this topic, and their conclusions are worthy of consideration. The disadvantage of psychological theories of hysteria is that the physiological anomalies are apt to be ignored owing to preoccupation with the psychical anomalies. In BABINSKI'S minute examination of the phenomena of so-called reflex paralysis we have a useful illustration and precedent for research, notwithstanding that, or because, reflex paralysis may really be a form of hysteria.

Scientific Education and its Cost.

THE minutes of the proceedings of the deputation of representatives of the universities of the United Kingdom received on Nov. 23rd, 1918, by the President of the Board of Education and the Chancellor of the Exchequer, Mr. H. A. L. FISHER and Mr. BONAR LAW, have been printed by the Universities Bureau of the British Empire, in order, no doubt, to preserve a fuller record of the speeches than is to be found in the newspapers. The names of those who were present to represent the universities, and other institutions doing work of university standard, show that the occasion of the deputation was not regarded lightly by any of the interested parties, and this was what might have been expected, seeing that the subject brought before the Chancellor of the Exchequer and the President of the Board of Education—namely, the financial needs of higher education—is one that at no time in our national history has deserved closer and more anxious attention.

We are living in a period full of opportunity for new progress and for development upon original lines in every direction, and we, as medical men, need not be ashamed to continue to remind ourselves of this obvious fact, so long as we see that there is a lack of unity and of promptitude in grasping the opportunity. It should not be necessary to point out that it is essential to recognise the facts and circumstances of the situation at the outset; if failure occurs in obtaining for medicine its just claims now, fresh reconstruction and reorganisation in the near future cannot be avoided; but time slips by and much yet wants discussion by the medical profession. In general and in brief the deputation, to use a popular expression, was "out for money." Its object was to secure State assistance in order to obtain in our country's interest the best brains and the best apparatus for instructional purposes, and in order to bring in among the learners the best of the young brains available. The coming Ministry of Health and the part which the medical profession must necessarily play in the carrying out of a health policy make the question of medical education of almost paramount importance. The fact that a well-educated and enlightened medical profession is a national need should not want to be emphasised at this juncture, but though medical men may be tired of hearing it said, public repetition is necessary. We must go on affirming these things until there is no doubt that a Government responsible to the nation for the rebuilding of its forces in a far-reaching and enlightened manner is awake to what lies before it. The development of sciences growing in number and extent every year, each adding to the need for a larger and increasingly skilled staff of scientific workers, has to be provided for. Each new discovery adds to the expense of teaching medicine and makes it more dependent upon outside financial aid. Each year medical knowledge grows and becomes more expensive to impart, and medical education will lag behind unless adequately endowed.

But it is not to be expected that such aid as the State may afford to scientific education will fulfil all requirements, and wealthy and patriotic citizens who desire to see the future progress of their country assured among the nations of the world have now an unequalled opportunity for personal generosity. The facts in respect to medical education display the debt of the public under this heading, and they should be brought forward regularly and plainly. If the facts were understood we believe money would be forthcoming at once both from State and private sources. First, medical men pay a large sum for their professional education, which lasts at least six years, a sum which, as we have seen, will in the near future inevitably be larger; it is now about £1000. Secondly, this education is conducted partly by lecturers on special subjects, mainly ancillary to medicine, and partly by medical men in practice, who are members of the honorary staffs of the hospitals attached to the educational centres. The first class of teachers is very inadequately paid, the second class is at any rate to-day hardly paid at all, save indirectly, and though we admit that this indirect payment is in some cases quite large, in most it is nothing of the sort. Thirdly, medical men are not drawn from a wealthy class of the community; despite all the brave talk about the splendour of our profession, only those who desire to work hard care to start on the medical life. The promising list of entrances, however, among the students shows that the value of medical coöperation in the great war has caused medicine to appear as our most potent influence in the resistance to national disasters. Fourthly, medical education is regulated and controlled by an important statutory body, but the expenses of maintaining the Medical Register and standardising the examinational tests are borne entirely by the medical profession. Yet the Medical Acts, under which the General Medical Council was called into being, were devised and are worked for the protection of the public and not for the aggrandisement of medicine. These are the things which we should like our readers to keep steadily before such public men and women as they come into contact with; they all converge to one point—that the public owes a debt to medical education. Those in charge of the Bill for the erection of the Ministry of Health ought to find the public ready to pay this debt.

Annotations.

"Ne quid nimis."

THE SLUM-DWELLER AND THE SLUM-OWNER.

A LECTURE delivered at Halifax by Dr. J. T. Neech, medical officer of health for that borough, has since been printed, and serves to ventilate some of the difficulties which are likely to delay the provision of suitable homes for the working classes in the United Kingdom. We are all agreed that a large number of workers are compelled to live in surroundings and in buildings which are in no sense suitable, except perhaps in point of price and of contiguity to their work. We also see, as the result of this, working men who can afford to do so living at a distance from the factories and places where they are employed, and travelling to them by trains, tramways, and omnibuses. This happens wherever the place of employment is in a large town, so that land is too much sought after for other purposes to leave it to any extent available for workmen's dwellings. Thus, streets and buildings, within the boundaries of a town where great industries are carried on, tend to become filled with workers who prefer to live near their place of employment, or whose employment makes it necessary for them to do so; by workers who cannot afford a cottage at a distance, with a journey as an additional expense; and by the large class of human beings in precarious employment, or in chronic unemployment, whom we find it difficult to picture as anything else than "slum-dwellers"—their main chance of casual jobs lies in being "on the spot." Dr. Neech advances the proposition that these "slum-dwellers" constitute one of the main difficulties of the situation, and that the hopeless and recalcitrant slum-dweller is a person who will remain as such and who cannot be compelled to be clean, industrious, and a decent member of society. He believes, however, that the slums and slum-dwellers of to-day are not what they were 50 or 25 years ago, that gradual improvement has taken place, and that up to a certain point it may be expected to continue. His suggestion here is that when the removal of the better class of its inhabitants from the slum has taken place, and the opportunity for reform and more wholesome conditions of living has been given, the children of those who prove to be beyond reform should be taken from them and be brought up in decent circumstances at the public expense. This he submits as a better investment from the national standpoint than the building of good houses for those not fit to live in them. To a certain extent he will win assent for his opinion as to the failure of surroundings and of opportunity to improve the worst cases now discoverable in the slums of our great cities. It is to be hoped, however—and indeed it may be believed—that surroundings and opportunity will effect something even with those who now appear to be hopelessly intemperate, thriftless, and indolent. As to the provision of houses, Dr. Neech is of the opinion that the industries employing the workers should bear as a legitimate charge the cost of building homes for them or a considerable proportion of it. Why, he asks, should the public at large provide houses for the working men gathered in a particular locality for the benefit of the manufacturers of motor-cars? Or why in another place should persons who may disapprove of alcoholic beverages provide houses for those profitably employed by a large brewery? There is something attractive in a suggestion, which Dr. Neech follows up, that the existing building societies, in which the manufacturers might become large shareholders, should be the medium through which extensive building operations for industrial workers might be financed. One of the questions which future experience must decide is, whether, under the industrial conditions of the future, there is to be a large class of industrial workers who are unable to provide themselves with decent homes or to set aside a proportion of their incomes sufficient for the rent asked, even though such rent represents far less than the normal interest to-day upon capital more safely invested. So stated the difficulty appears merely financial, though other sociological factors are at play. But the decent housing of the industrial classes is one of the greatest requirements of modern medicine. To spare any effort to secure housing reform is to impede preventive medicine in a terrible proportion. The public debt incurred for carrying out adequate re-housing schemes would have to be crushingly heavy before it proved to be anything but a public asset, manifested by increased national vigour and productiveness.

THE TREATMENT OF AMŒBIC DYSENTERY.

THE treatment of amœbic dysentery by hypodermic injection of emetin, introduced by Sir Leonard Rogers, has been considered a great advance on the time-honoured treatment by ipecacuanha, as the serious drawbacks of the latter method, particularly vomiting, are avoided. In the *Journal of the American Medical Association*, Professor S. K. Simon, however, contends that the older treatment is, after all, the better in the more chronic and intractable infections. The prompt action of emetin is striking and its amœbicidal effect on free organisms is undoubted, but in the destruction of encysted amœbæ it fails, opening the way for relapses. Unless large doses of ipecacuanha or emetin are given the amœbæ seek protection by encysting themselves. In considering the dosage necessary for completely overwhelming them the toxicity of the drug must be taken into account. Crude ipecacuanha in amounts as high as 75 gr. daily for ten days has been found singularly devoid of toxic effects, but not so the alkaloids in equivalent dosage. In 1916 two American investigators, Pellini and Wallace, showed that emetin depresses and may eventually paralyse the heart, that it is a powerful gastro-intestinal irritant, whether given orally or subcutaneously. Because of the failure of emetin to destroy encysted amœbæ and its toxic properties attempts have been made to devise higher chemical formulæ of the alkaloid, such as emetin bismuthous iodide, and these have been extolled by British writers in the more intractable forms of dysentery and in the freeing of carriers from infection, but these claims have not been endorsed in America. In the treatment of dysentery in the Southern States Professor Simon therefore reverted to the old treatment. He used salol-coated ipecacuanha pills with gratifying results both in treating the active disease and preventing relapses. But he insists on careful attention to detail, and to want of this ascribes the prejudice against the crude drug. The patient

must be put to bed for the whole course, usually extending over ten days, and restricted at first to foods which leave no residue, such as broths, whey, and albumin water. Milk is to be added only after the fifth or sixth day. A dose of castor oil should be given on the morning of the first day and in the evening 10 to 15 pills, each containing 5 gr. of ipecacuanha. They are to be swallowed slowly with a little water. No nourishment is to be allowed for two hours preceding and for six hours following administration of the pills. Each succeeding night the same plan is repeated. It may be necessary, especially if there is any depressing effect, to discontinue the pills for one night. The nurse records the number of pills which may be passed undissolved in the stool, so as to determine the total amount of ipecacuanha retained. The complete dosage includes the retention of 100 pills (500 gr. of ipecacuanha). This is usually accomplished in 10 days and only rarely requires two weeks. If vomiting is troublesome an extra coating of salol should be given to the pills. For reasons not clear a large number of pills may be passed undissolved, even with a diminished coating. One or two punctures may then be made in the pills. When under rare conditions the ipecacuanha is not tolerated in pill form, daily instillations of 30 gr. of ipecacuanha, suspended in water, may be given by duodenal intubation, using Gross's method of introducing the tube. The problem of effective treatment hinges on concentration of the active constituents of the drug at the site of infection in the large bowel. When emetin is administered hypodermically or by mouth it is enormously diluted before it is brought by the blood stream into actual contact with the affected intestinal wall.

THE HEALTH OF LILLE DURING GERMAN OCCUPATION.

Professor A. Calmette, who has now left the Pasteur Institute at Lille to direct the parent institute in Paris, has recently laid before the Academy of Medicine his first-hand impressions of the effect of the German occupation of Lille upon the health of its inhabitants. He remained at his post during the whole of this period. Before the war the population of the city was 220,000, but at the time of its liberation by the Allies the number had decreased to precisely one-half. In 1914, when the Germans were advancing through Belgium on Northern France, about 60,000 persons fled from Lille in panic to seek safety in other parts of France or in adjoining neutral countries. When the Germans arrived they deported about 25,000 young women and youths to Germany to work there in factories and workshops; others were compelled to do forced labour in the trenches or work in some other way in the war zone under conditions of great danger to life and health. Those who remained were naturally the elderly and weakly, as well as a large proportion of children. The annual death-rate from all causes in the city before the war averaged 19·1 per 1000, but it rose gradually in the altered population from 27·7 in 1915 to 415 in 1918. Among the chief causes of death were tuberculosis, diseases of the heart, epidemic dysentery, and scurvy, as also those other diseases which are provoked or aggravated by insufficient nourishment. The death-rate from tuberculosis had been, before the German occupation, 3·3 per 1000, but from 1916 to 1918 it rose to 5·7. Professor Calmette states on high authority that examination of the children and young people after the liberation of Lille showed their development to have been arrested and about 20,000 young subjects to have become "degenerates" as a result of insufficient or bad food, the high prices of which during the German occupation were, to quote M. Calmette, "fantastic." As might have been expected in the circumstances, births rapidly declined, although not quite to vanishing point, falling from a total of 4885 in the year 1913, to 602 in 1917, and 609 in 1918. Infant mortality diminished considerably at the same time owing, M. Calmette suggests, to the lack of cow's milk in the city and the consequent disappearance of infantile gastro-enteritis. Mothers suckled their own infants or fed them on the condensed milk provided by the American Committee. These are only some of the points of interest contained in M. Calmette's study.

SELECTIVE TISSUE DESTRUCTION.

THE paper on Picric-Brass Preparations in the Treatment of Lupus contributed to our present issue by Dr. H. A. Ellis covers a good deal of unexplored territory. The selective destruction of tissue is an aspect of the antiseptics question which has attracted the attention of bacteriologists and clinicians alike since the early days of the antiseptics controversy. It has long been recognised that the various tissues of the body have widely differing powers of resistance, and that this difference has a very practical bearing on matters so diverse as the laboratory standardisation of antiseptics on the one hand and phagocytosis on the other. The work of Ehrlich and his colleagues on the salvarsan compounds gave unmistakable indications of differences existing between the selective destruction of tissue in diseases due to protozoa, such as syphilis, and diseases due to the pyogenic organisms. Again, the recent work of Lorrain Smith, Dakin, Browning, and others on the newer antiseptics has shown that free hydrogen ion concentration, electrolytic dissociation, and numerous other physico-chemical phenomena enter very largely into the question. In applying similar principles to tuberculosis difficulties arise, the chief of which is that the histological tubercle is an avascular growth. We await further details of Dr. Ellis's work with interest.

PLANT STIMULATION BY ULTRA-VIOLET RAYS.

SOME remarkable experiments have recently been made in regard to the influence of ultra-violet rays on the development of the sugar cane, the pine-apple, and the banana, which seem to show that if it were not that the atmosphere largely absorbed these rays from sunlight the world's production of vegetable foodstuffs would be very materially increased. For example, three lots of sugar cane were planted, the first being covered with coloured glass to exclude 50 per cent. of the sun's ultra-violet rays, the second being exposed normally to sunlight, and the third to the combined action of sunlight and of the ultra-violet rays from a mercury vapour lamp. Beyond this distinction other things were equal, as, for example, supplying the plant with the same kind and amount of fertiliser. After several months the second lot was found to contain as much as 30 per cent. more sugar than the first, and the third lot contained 8 per cent. more sugar than the second. It is suggested that, according to this experiment, the time taken normally for the development of

the cane to maturity, which is as a rule 20 months, would be very considerably reduced if only an economic and practical source of ultra-violet rays could be found. The use of mercury lamps on any scale is, of course, impracticable, but there is a possibility of producing the rays perhaps by less expensive means. Pineapples submitted to the rays for 40 minutes each morning developed a fruit riper, juicier, and larger than that exposed to sunlight only. It was further noticed that banana leaves and stalks which had been cut and placed in water kept their original freshness even after two weeks when they had been exposed to ultra-violet rays, whereas the same materials untreated faded completely after six or seven days. This treatment when carefully carried out therefore delays the deterioration of the fruit, and so would help its export to a remote destination in sound condition. The ultra-violet rays, of course, are well known for their germicidal properties and have been used as a means of sterilising drinking water even on a large scale, as at several towns in France. It would be interesting if some relationship were proved to exist between this sterilising action of the rays and their stimulating effect on plant development.

THE WORK OF THE AMERICAN MEDICAL CORPS.

IN the United States of America some millions of men were recruited within the space of a few months. Between March and December, 1917, the number of enlistments increased 8-fold, and in September of that year alone 462,000 were mobilised. Camps were set apart for them, and after a period of training they were sent to England or France. A large majority of the recruits came straight from city life and were in soft condition. At the outbreak of war the Medical Corps of the United States Army was totally inadequate to deal with anything but a small expeditionary force. Volunteers from among civilian medical men were available, but they needed training in army methods before they could become serviceable. The problem was, in fact, a difficult one to solve. But the medical profession of the United States rose to the occasion, and a sufficient number voluntarily offered their services to put the newly-raised army under effective medical and surgical care—a result largely due to the energy and initiative of Colonel Franklin Martin, of Chicago. The response of highly skilled surgeons and physicians to their country's call was prompt and general, and it was their assistance as organisers, and especially the example set by them to their fellow practitioners, that melted away difficulties. When all the circumstances of the campaign are taken in review there remains no doubt that the exceptionally good health of the new American Army on both sides of the Atlantic has been a testimony to the success of medical mobilisation. With the exception of influenza, no widespread epidemic has prevailed. Lobar pneumonia and cerebro-spinal fever were prevalent for a time in certain camps, but never attained large proportions. As in the Allied armies, the enteric fevers formed an almost negligible factor in producing military inefficiency, and diseases the spread of which is mainly due to defective hygiene and sanitation were conspicuous by their absence.

These facts are confirmed in a report recently issued by the U.S. Secretary for War dealing with the health of the American troops up to the end of August last. For the year preceding that date the death-rate from disease among troops in the United States was 6·4 per 1000; in the Expeditionary Force it was 4·7; in the combined forces it was 5·9. The male civilian death-rate at the same period for the age-groups most nearly corresponding to the Army age was substantially the same as the rate for the Expeditionary Force. What the low figure means in lives saved is shown by a comparison with the rate of 65 per 1000 in the Union Army during the Civil War, and one of 26 per 1000 in the whole American Army during the Spanish War. With the changing personnel of the Army the incidence of disease changed too. In 1916 tuberculosis accounted for 14 per cent. of deaths, pneumonia for 11, and cerebro-spinal fever for 4. In 1917 the figures were 4, 25, and 10 respectively. Pneumonia, either primary, or secondary to measles, was in fact responsible for 56 per cent. of all the deaths among the troops in the year under consideration. In the subsequent period the sky was clouded by the influenza epidemic. During the eight weeks from Sept. 14th to Nov. 9th 316,000 cases of influenza were reported amongst troops in the United States, and over 53,000 cases of pneumonia. Of the 20,500 deaths notified during this period probably all but about 700 were the result of influenza. In another direction the good health of the Army was in no small measure due to the vigorous anti-venereal campaign waged by the U.S. War Department. The measures put into force included the repression of prostitution and of the liquor traffic in zones near cantonments, provision for a sensible social environment and proper recreation, education of soldiers and civilians with regard to the risks of venereal disease, the provision of prophylactic remedies, and prompt medical treatment in case of infection. During the year under review the number of venereal admissions to sick report was 126 per 1000 men, the figure including duplicate entries. It is stated that in a majority of cases the disease was contracted before entering the Army. Among the troops in France, where there were no recruits fresh from civil life, the record was better than at home, and the incidence of venereal disease fell rapidly and continuously. All these facts are set out at length in the report of the Surgeon-General, U.S. Army, for the fiscal year ended June 30th, 1918, although the record does not contain the recent figures given above.

Something of the total achievement may be gleaned from the statistical part of the report. In the States the Army had at disposal 80 fully equipped hospitals, with a capacity of 120,000 beds. At the time of the armistice there were 104 base hospitals and 31 evacuation hospitals belonging to the Expeditionary Force, in addition to an evacuation hospital in Siberia. Army hospitals in the States dealt with nearly a million and a half patients during the war; those with the Expedition had approximately half this number under their care. It will be remembered that, over and above furnishing the medical personnel for the units detailed, the War Department, through its chief surgeon, released 931 American medical officers to serve with the British forces at the most critical period of the campaign, and a further 169 officers for service in base hospitals turned over to British troops. The total number of the civilian medical profession in America is, however, so large that, taken all in all, up to the end of July only about 15 per cent. were counted as having gone on active service. The

reservoir on which to draw was much greater than ours, and although, as we have seen, the satisfactory health of the American Army during the war was due to the devotion and self-sacrifice of a goodly proportion of the civilian medical profession, this was done without dangerously depleting the number of those on whom still rested the responsibility for health and hygiene at home.

THE PSYCHOPATHIC CRIMINAL.

WE are glad to learn that the justices of the city of Birmingham have taken further steps to give effect to the scheme for the psychiatric examination and differential treatment of psychopathic offenders, to which reference was made in THE LANCET of Jan. 25th. The justices have obtained from the Prison Commission the promise of the appointment to Birmingham Prison of a whole-time medical officer with special expert knowledge of mental diseases; and they have also secured the services of Dr. W. A. Potts to act as court doctor to advise in cases not coming under the examination of the prison medical officer, as, for instance, cases where accused persons are remanded on bail or charged on summons. It is proposed that in all prosecutions when there is reason to suspect that the alleged offender is mentally abnormal the court shall postpone action until full inquiry on this point has been made by either the prison medical officer or the court doctor, or by both these experts in consultation. On the further hearing of the case, if the justices decide to convict, this expert evidence will be brought out in court and will be taken into account in settling the mode of treatment which will best serve the interests of the individual offender and of the community. The justices anticipate that, even in the existing state of the law, they will be able to give effect in a considerable measure to the principle of individualised treatment by using their very wide powers under the Probation of Offenders Act. Thus, it will be possible to include in the conditions of probation that the person placed under probation shall report himself periodically to the court doctor, shall observe such instructions regarding his mode of life, and shall accept such medical advice and treatment as the court doctor may give him. The Birmingham justices are setting an excellent example to the country, and the results of their experiment cannot fail to be extremely valuable in view of the growing recognition of the need to ensure the more efficient treatment of mental invalids by the organisation of psychopathic clinics.

TUBERCULOSIS IN FEMALE MUNITION WORKERS.

TOWARDS the end of 1917 it became evident that the mortality from tuberculosis among women was on the increase. This increase was small, but appreciable; and it was the more significant in the light of the fact that before the war the mortality from tuberculosis had been steadily decreasing. In his analysis of the vital statistics of England and Wales for 1916, Dr. T. H. C. Stevenson has noted that the increased mortality from tuberculosis did not affect women over 45. Hence his suggestion that the cause of the increased mortality is to be sought in the war-time industrial employment of women on an unprecedented scale. To test the validity of this suggestion, an inquiry was instituted, under the auspices of the Medical Research Committee, as to the prevalence and ætiology of tuberculosis among industrial workers, with special reference to female munition workers. The report[1] on this inquiry by Captain M. Greenwood and Dr. A. E. Tebb tends to confirm Dr. Stevenson's views, but, as they point out, it is impossible to put the accuracy of these views to any absolutely rigid test. The report deals with the available evidence in the following sections: (1) Occupational Tuberculosis, as revealed by the statistics of male operatives, the Registrar-General's decennial supplements including the unpublished data for 1910–12; (2) Occupational Morbidity and Mortality of Women; (3) Regional Distribution of Mortality in England and Wales during 1911; (4) War-time Statistics of England and Wales; (5) Factory Conditions in Birmingham in 1917. Investigations in Birmingham showed a relatively great incidence of phthisis among employees in unhygienic factories and serious overcrowding in industrial dwellings. But no evidence was found of any specific trade habit amongst munition workers specially apt to favour conveyance of phthisis from one person to another.

FACTORY SURGEONS AND THE MINISTRY OF HEALTH.

THE Association of Certifying Factory Surgeons has circularised the members of the Standing Committee appointed to consider the Ministry of Health Bill regretting that the Bill, as it stands at present, does not include a well-defined policy of improved medical supervision for factories and workshops. While the Bill certainly enables the Ministry to take over factory inspection, the decision would apparently depend on agreement between the different Government Departments concerned. The Association recommends that the powers and duties of the Secretary of State with respect to control of sanitation in factories and workshops, the appointment of medical men as inspectors of factories, and the appointment and duties of certifying surgeons, should be among the powers which can be transferred to the Ministry of Health by Order in Council. The Association also desires the appointment of a Board of Health on the lines laid down in the original Bill, to advise the Government on all legislative and administrative points concerning public health.

IN view of the approaching retirement of John A. Turner, C.I.E., M.D., D.P.H., executive health officer to the municipality of Bombay, the corporation has placed on record their recognition of his long and arduous services extending over a period of 18 years, especially in connexion with the Bombay Sanitary Association, the King George V. Anti-Tuberculosis League, the Lady Willingdon Scheme Maternity Homes, and the Anti-Venereal League. All these useful institutions owe their establishment largely to Dr. Turner's efforts.

[1] An Inquiry into the Prevalence and Ætiology of Tuberculosis among Industrial Workers, with special reference to Female Munition Workers. H.M. Stationery Office. 1919. 1s 6d. net.

SIR CHARLES BURTCHAELL HONOURED.—The honorary degree of LL.D. Dublin was recently conferred upon Sir Charles H. Burtchaell, D.G.A.M.S. in France, when the orator described him as: Medicum inter medicos, bellatorem inter bellatores eminentes eminentem. On March 3rd he was admitted to the honorary fellowship of the Royal College of Surgeons in Ireland, and on March 7th received a like honour from the Royal College of Physicians of Ireland. Addressing a medical audience on the latter date on Disease and Success in War, General Burtchaell paid a tribute to the work of the "Dublin Hospital" at Boulogne.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Scottish Ministry of Health Committee.

WHEN the Ministry of Health Bill was first introduced a temporary council or committee was formed in Scotland drawn from recognised official medical bodies, with the view of collecting and formulating the opinions of Scottish doctors on the establishment of the Ministry and the problems of medical reconstruction. At a conference, held on Jan. 4th, representatives were present of the Scottish Branch, General Medical Council, the Scottish Universities, the Scottish Royal Medical Corporations, the Scottish Committee, B.M.A., and the Association of Medical Officers of Health, when it was agreed to form a committee—to be known as the Scottish Ministry of Health Committee—for the above purpose. It was decided that the committee should consist of 44 members, made up as follows:—

Scottish Members of the Scottish Committee of the British Medical Association	18
Members of the Scottish Branch of the General Medical Council	9
One representative from each of the Medical Faculties of the Scottish Universities	4
Two representatives from each of the other Licencing Bodies in Scotland	6
Two representatives from the Association of Medical Officers of Health	2
One representative from the Scottish Association of Medical Women	1
Four members to be coopted later	4

At the first meeting office-bearers were appointed as follows:—Chairman: Sir Donald MacAlister. Vice-chairmen: The Presidents of the Royal Medical Corporations; The Direct Representative for Scotland on the General Medical Council; the chairman of the Scottish Committee; and Dr. Goff, Bothwell. Secretary: Dr. Fredk. K. Smith, Aberdeen. It was agree that the office-bearers should form a business subcommittee to prepare business for the full committee.

The committee has met twice to consider the Ministry of Health Bills as published in November, 1918, and February, 1919. Each clause in the Bills was discussed and various suggested amendments were considered. Ultimately it was resolved to communicate the following to the authorities concerned:—

1. That provision ought to be made by direct enactment in the Ministry of Health Bill for the transfer to the Minister of Health of the Administration of the Anatomy Acts, and to the Scottish Board of Health of the Administrative Work of the Highlands and Islands Medical Service Board.

2. That with regard to the constitution of the Scottish Board of Health, the proposed minimum of medical representation—namely, one member—is totally inadequate, and that not less than one-third of the members of the Board ought to be registered medical practitioners; and also that the special provision that a medical member of the board should be the holder of a "diploma in sanitary science, public health, or State medicine under Section 21 of the Medical Act, 1886," is unnecessary and should be omitted.

Chair of Therapeutics, Edinburgh University.

The necessary preliminaries having been concluded, it is understood that the Edinburgh University Court will shortly proceed to the appointment of a professor of therapeutics. An entirely new scheme for the teaching of materia medica will thus be completed, the appointment of Professor A. R. Cushny to the Chair of Pharmacology having recently been made. The new professor will, in addition to his systemic lectures, teach clinical medicine in the wards of the Royal Infirmary recently under the charge of Sir Thomas Fraser, emeritus professor of materia medica. He will be debarred from private practice.

Influenza Epidemic in Edinburgh and District.

There is every indication that the epidemic is rapidly abating; new cases are not so frequent, admissions to hospitals are much less numerous, and the cases which are occurring seem to be definitely less acute in most instances. Active investigation of the disease is being carried on in the laboratory of the Royal College of Physicians, but results have not yet been reported.

March 10th.

THE Dorset County Council has increased the salary of Dr. W. T. G. Robinson, their medical officer of health, by £100 to £600 per annum.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Professor Chantemesse.

André Chantemesse succumbed on Feb. 26th to a sudden attack of angina pectoris coming on during influenza, at the age of 67 years. He was born at Puy on Oct. 13th, 1851, and, soon coming under the influence of Cornil and Pasteur, decided to devote his life to pathological anatomy and bacteriology. He became in succession physician to the hospitals, professor of hygiene in the Faculty of Medicine, and Inspector-General of Sanitation at the Ministry of the Interior. His best-known works dealt with mosquitoes in relation to yellow fever, flies in relation to cholera, prophylaxis on frontiers, while he was looked upon as an authority on the enteric fevers. It was Chantemesse, in fact, who instituted the first researches on antityphoid inoculation. By means of heated cultures he produced a vaccine which gave good results in animals but produced no decisive effect on man. Hence his discovery led no further until Wright used a lower temperature for sterilization and Vincent suggested ether for the same purpose, when he modified his procedure with resulting success. Professor Chantemesse was a member of the Academy of Medicine and a Commandant of the Legion of Honour.

Phthisis among Coloured Troops in France.

M. L. Moreau has noted during the war the frequent occurrence of tuberculosis amongst the men of the yellow and black race in the French Army. The disease is apt to escape discovery, as the general health of the men often remains good for long. Strange climatic conditions, physical overstrain in subjects wont to live a life of indolence, and changes in their usual alimentary régime, are among the causes adduced to explain the rapid development of tuberculosis. When the disease is clinically latent the X ray screen at once gives the clue. In many coloured labour battalions influenza has aided the development of the disease, and has frequently been the cause of a fatal issue. M. Moreau suggests that these men should be submitted to careful radioscopic examination before being employed in Europe.

The Late Results of Gassing.

Professor Achard directs a special gas service at the Hôpital Necker, in Paris, receiving there the patients sent down from casualty clearing stations as convalescent, although many of them were found to be still insufficiently recovered at the end of their leave. He has followed the subsequent history of 3525 patients, of whom 2958 had been submitted to blistering gas and 567 to suffocating gas, the proportion being 85 per cent. of the former to 15 per cent. of the latter, blistering gas having been employed by the Germans on a larger scale than the other. The frequency of late accidents was, however, much greater in the case of suffocating gas, which leaves the graver and more lasting results. Chief of these is the diminution in respiratory exchange. Normally the amount of CO_2 exhaled hourly per kilo of body-weight is 0·55 g. After gassing this figure continues to drop considerably for a prolonged period, demonstrable by placing the patient in a closed chamber in which the quantity of carbonic acid gas produced is measured. The figure mentioned may drop to 0·34 g. in a man who has been submitted to suffocating gas, and this low value may persist, it may be, for as much as two years. After blistering gas the results are less grave and lasting; the diminution of the figure mentioned rarely lasts more than seven to eight months, nor does it fall below 0·40 g. The reduction in CO_2 output is not regular; it is considerable at the outset owing to pulmonary œdema. The output gradually rises for two weeks or so, during which the bronchi become patent and falls anew for a very extended period, in which the lung lesion is undergoing sclerosis. Another subject studied by M. Achard, both clinically and experimentally, is the relation between tuberculosis and gassing. He concludes that tuberculosis does not develop more frequently in gas victims than in other subjects, but that when latent lesions exist they are apt to undergo rapid development. A number of gassed patients, owing to persistent cough, wasting, apical râles, and even hæmoptysis, give the impression of being tuberculous, but their sputum

is found on examination to be free from albumin, and X ray examination of the lungs shows them to be entirely clear, while the apices light up as they should during cough.

March 8th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Indian Science Congress.

THE Indian Science Congress was held recently at Bombay. Sir George Lloyd, the Governor, having opened the Congress, the presidential address was delivered by Sir Leonard Rogers, who gave an account of his work in the field of cholera research. He showed how this work, which had been carried out in circumstances often of great discouragement, had resulted in reducing cholera from a disease from which there was little or no hope of recovery to one in which, granted speedy treatment, there was not much more danger than from many other diseases productive of death.

The Supply of Sub-Assistant Surgeons.

In an address recently delivered in Calcutta at the opening of a sanitary and indigenous drugs exhibition, the Governor of Bengal, Lord Ronaldshay, referred to the need for an adequate supply of sub-assistant surgeons to effect any lasting improvement in the public health of Bengal. He hoped that some of his hearers would look to sanitation as a career. There had hitherto been little inclination among medical men to do this because the openings for highly qualified men had been so few, but as part of the campaign against disease it was his intention to ask each local board to employ a fully qualified health officer. Lord Ronaldshay also referred to the demand for sub-assistant surgeons in Mesopotamia, where the Government was prepared to offer generous terms to volunteers.

The Next War: Man versus Insects.

Lieutenant-Colonel W. Glen Liston read a paper with the above arresting heading at the Indian Science Congress last month. The lecturer emphasised the need of educating the people in the dangers which multiplication of insects connotes, and appealed for greater coöperation among medical men in all their work, and particularly in the work of research and in preventive measures. As an example he cited the fact that in India more than ten million lives have been sacrificed to plague, which is preventable, and only requires the coöperation of medical men, the enlightenment of the people, and the spending of money to make it disappear.

Plague.

The Sanitary Commissioner with the Government of India, in his notes on the plague from returns made in December, stated that the incidence of plague mortality remains uniformly low throughout the country. The mean incidence of plague mortality for the month of December during the last 20 years has been 35,808.

Organisation of Chemical Work in India.

The Commission which has just concluded its labours recommends the appointment of a Chief Chemist to the Government of India, with three Deputy Chief Chemists controlling the following groups of chemical works:—(*a*) Agricultural; (*b*) organic; and (*c*) minerals. Under the Chief Chemist would be a headquarters laboratory engaged on all forms of chemical research.

Cholera.

The latest reports from India state that the mortality from cholera in Bombay is increasing, in one day the returns showing 398 attacks and 382 deaths. Hitherto the epidemic has been confined to the poorer people, but it seems to be now spreading to the more well-to-do classes. A large number of the people are freely getting themselves inoculated against the disease. In Calcutta the latest report shows 170 deaths, a figure 155 in excess of the quinquennial average. A heavy mortality from cholera is reported among the pilgrims at the annual Ganges Fair at Sangor Island.

Feb. 6th.

A NOTICE appeared in the *London Gazette* of Feb. 21st intimating that Sir John Lynn Thomas will in future use the name of Sir John Lynn-Thomas.

CONTROL OF VENEREAL DISEASES.

Venereal Disease in Ontario.

ACCORDING to the evidence of those best qualified to speak with authority the war has increased the prevalence of venereal infection, or, at any rate, has afforded the means for collecting statistics with regard to many phases of the subject which hitherto have been more or less matters for conjecture. The gathering together of large numbers of men under military law has provided a favourable opportunity for collecting figures as to incidence, manner of infection, most potent means of spread, &c. In Toronto, in consequence, a great deal of very valuable information has been collected respecting the venereal problem in Ontario. Captain Gordon Bates, C.A.M.C., of Toronto, in a paper on the subject which was read by him at the annual meeting of the Canadian Public Health Association held in Hamilton, Ontario, on May 27th and 28th, 1918, and which was published in the *International Journal of Surgery*, September, 1918, pointed out that the vigilance of the army authorities showed that the situation in Canada as regards venereal disease was very serious. Many important facts were brought out in this paper, of which the following may be emphasised.

The great majority of venereal cases occurring in that part of the army stationed in and about Toronto were infected previous to enlistment. Whilst over 50 per cent. of the infections discovered by the military medical officers had taken place in Toronto, infected men came in both from every city and town in Ontario, from other provinces, from the United States, and from other parts of the world. The social conditions surrounding the infection of each individual were investigated, and reliable information was procured with regard to the kind of prostitution existing in various parts of Canada. It was found that in a few parts of the Dominion organised prostitution existed on a somewhat large scale. In Ontario the problem to be faced was almost entirely that of clandestine prostitution, laws enforced by the police having practically eliminated organised commercial prostitution in the province. On the streets of towns in Ontario there were always hundreds of young girls ready to sell their favours to any stranger. As a rule these girls were under 20 years of age and generally worked during the day, depending largely on regular occupation for a living. It was found that a large number of them, almost a third of the cases met with, pursued this manner of life without charging a fee.

In Ontario the question of venereal disease aroused so much apprehension that various means have been tried in the endeavour successfully to combat its inroads. Colonel J. W. S. McCullough, head of the Ontario Board of Health, has been mainly instrumental in causing to be enacted laws of a drastic character calculated to improve the situation. The Venereal Diseases Prevention Act of Ontario covers the following points:—

1. The medical officer of health may examine any person under arrest who is suspected of being infected with venereal disease, and may order such a person to be isolated and treated if found to be so infected. 2. In cases in which the medical officer of health is credibly informed that any citizen is suffering from venereal disease, and has infected, or is liable to infect, other persons, the medical officer of health may cause that person to produce proof that he or she is, or is not, infected. If the person is found to be infected, the medical officer of health may compel him or her to be treated; the treatment may be carried out by the patient's private physician. If treatment is not carried out the patient may be quarantined and treated by the health authorities. 3. The medical officer of health, or a legally qualified practitioner appointed by him, may enter any house, outhouse, or premises in the daytime, as is the case with other infectious diseases, for the purpose of inquiry and examination into the state of health of the inmates, and may take measures for the treatment of persons found venereally infected, or for the prevention of fresh infections. 4. Every hospital receiving aid from Ontario under the Hospitals and Charitable Institutions Act shall make effective provision for the examination and treatment of venereal disease under a heavy penalty. 5. Advertisements relating to the cure or treatment of venereal disease are prohibited. 6. Anyone who knowingly infects another person with venereal disease is subject to a heavy fine or imprisonment. 7. The Provincial Board of Health of Ontario is given power to make regulations for the control of venereal disease.

Captain Bates gave as his opinion that if legislation was to be useful further organisations would be necessary to back up its provisions. He has advocated a Federal Department of Health in order to stimulate and coördinate action in the different provinces.

Venereal Disease in Montreal.

In Montreal the situation as regards prostitution is very different from that in Toronto. Here commercial prostitution prevails. The preliminary report of the Committee of Sixteen of Montreal (the committee of an unofficial organisation which investigated the vice conditions of Montreal) made the following statement with regard to the number of houses of prostitution in existence at the time of its survey.

The estimate as to the number of houses of commercialised prostitution, given by the officers of the morality squad, is that there are between 250 and 300, and they state that about six or eight hotels are operated almost exclusively as houses of assignation.

Venereal disease is very prevalent in Montreal. Over and above the numerous facilities for contracting infection supplied by commercialised prostitution, there are other circumstances which tend to favour the spread of venereal infections. Montreal is the only large port of Canada, as compared with the large ports of the world. Sailors from all parts sail in and out, and of course convey infection. Since the beginning of the war Canadian troops have come into Montreal to sail for their European destinations, and those who have returned have come back by the same route. No prohibition law has here been in force, and it is generally allowed that there is a close relationship between the incidence and prevalence of venereal infection and the consumption of alcoholic beverages. Many circumstances seem to combine to render the situation in Montreal, so far as the prevalence of venereal disease is concerned, of a very serious and menacing character. In the Province of Quebec there is no law to control the spread of venereal infection. At the General Hospital in Montreal three clinics are held each week at which there is an average attendance of 125 men and women suffering from venereal disease, of whom about 60 per cent. are suffering from gonorrhœa and 40 per cent. from syphilis; and this is only one of the hospitals of the city.

The Problem in Eastern Canada.

From this short account it will be seen that venereal disease is unduly prevalent in Eastern Canada, and that in Ontario and Quebec the conditions differ widely. Organised commercial prostitution is easier to cope with successfully than is clandestine prostitution. If civil authorities would act firmly, organised prostitution could be abolished, but the civil authorities have not learned to recognise the relationship between prostitution and venereal disease, and therefore frequently will take no adequate action, and prostitution is essentially a matter for the courts to deal with. It behoves the members of the medical profession, therefore, not only to concern themselves with the diagnosis and treatment of venereal disease in prostitutes, but to make it clear to the civil authorities that to allow prostitution to continue is a menace to the public health, and thus urge them rigidly to enforce the laws. Clandestine prostitution is also a difficult problem to solve. Members of this class are more numerous, are almost impossible to trace, and, being young, are more apt to be acutely infected.

There is little doubt that the war has increased the spread of venereal disease in Eastern Canada, but to what extent it is impossible to say. With the demobilisation of troops on a large scale the menace will be intensified unless effective preventive measures are put into force, but the general public is being educated as to the dangers of uncontrolled prostitution with its consequent aftermath of venereal disease, and preventive measures are now demanded. Women are taking a prominent part in the movement.

THE AVIATION INSURANCE ASSOCIATION.—This association has been formed to accept at home and abroad all risks in connexion with both heavier and lighter-than air craft. The association consists of Underwriting Members of Lloyds, the Eagle, Star, and British Dominions Insurance Company, Ltd., and the Excess Insurance Company, Ltd. The business will be controlled by a committee of five and offices have been opened at No. 1, Royal Exchange-avenue, E.C.

MATERNITY AND CHILD WELFARE.

Conditions of Childbirth in India.

THE unhappy conditions of childbirth among Indian women have long been a matter of concern. In 1885 the Countess of Dufferin's Fund was organised to meet the need. As time went on the number of medical women practising in India, both Dufferin and missionaries, increased, midwives and nurses were trained, and a number of Indian assistant and subassistant surgeons finished their course and left the schools and hospitals. This but served to bring into relief the enormous amount of preventable mortality which occurred both among mothers and children, due to puerperal sepsis, pelvic contraction—sometimes extreme—misplacements, accidents occurring during labour, pregnancy diseases, and ignorance on the part of the people as to methods of artificial feeding of infants in cases where the mothers had died during childbirth.

Victoria Memorial Scholarships Fund.—In order to combat this unnecessary suffering and loss of life the Victoria Memorial Scholarships Fund came into being in 1903, formed by Lady Curzon, for the improvement of the conditions of childbirth in India. It was expressly stated in the nineteenth annual report of the National Association for Supplying Female Medical Aid to the Women of India for the year 1903 (p. 27) that the funds were to be applied to the training of the hereditary dai caste as opposed to dais and midwives taken from other classes whose training might be left to the agencies already carrying it on. A fund was collected amounting to Rs.6,86,784.15.8, from which an annual income of Rs.34,000 was derived. This was distributed among the different provinces, sufficient being retained to carry on the central expenses and to assist special enterprises in the interests of the objects of the Fund. The money was kept apart from the Dufferin Fund and the organisation was carried on by an executive committee selected from among the members of the central committee of the Dufferin Fund. In each province the Fund was administered by the Inspector-General, and in each centre where operations were started a local committee was formed.

Endeavours were then made to induce dais to attend courses of instruction. Many of these women were 40, 50, 60, or even 70 years of age; some were deaf, some were blind; none had any previous education or had ever exercised their mental faculties; they were very prejudiced and jealous of their reputation, and, in addition, were honestly convinced that no one could teach them anything as regards normal labour. The results of these efforts were variable; in some cases the classes had ceased to exist or could not be formed, and it was suggested that the grants might be used for the training of women not of the dai caste. This has by degrees led to the almost total abandonment of the objects of the Fund, which in many cases has been used for different but allied objects.

Report of Fund for 1918.—The report for 1918 gives a large amount of information, including reports and suggestions from centres, papers by medical women on improvement of the conditions of childbirth, several of which are published in complete form, together with extracts from the annual reports. The following is a summary:—

The greatest success in the training of indigenous dais has been met with in the Punjab where training combined with supervision is being carried on at Amritsar, Ambala, Ferozepore, Bhiwani, Multan, and Lahore; in addition at Ludhiana 124 indigenous dais have been trained. The report of the Inspector-General of Civil Hospitals, Punjab, shows that a large extension of this work is contemplated in the near future.

Next most successful are the Indian States where large numbers of the hereditary dai caste have been trained at Bhopal, Patiala, Indore, Hyderabad, Baroda, Gwalior. In some of these States supervision is also carried on.

In some stations in the United Provinces large numbers of hereditary dais have been trained, but with the exception of Agra there is no system of supervision, and the Inspector-General in his memorandum expresses the opinion that the work has been useless and says that it is his intention to discontinue it.

In Baluchistan training and supervision are carried out at Quetta. In the Central Provinces training and supervision are carried out at Nagpur. In Bengal and Bihar and Orissa indigenous dais have been trained, but there has been no supervision. The general opinion is that no improvement has resulted, and the Surgeon General and other medical officers in Calcutta recommend that operations should cease and all efforts should be concentrated on the endeavour to replace the hereditary dai by a better educated woman. The Bombay and Madras Presidencies are outside the operations of the Fund.

Several of the papers written by medical women describe successful work among dais. Others give graphic accounts of the difficulties to be

overcome, and especially of the enormous amount of sepsis which in two papers received is estimated as causing (at times) a mortality of 80 per cent. of natural labours! There is also a number of useful suggestions for methods by which improvement can be secured.

Suggestions for improvement.—Many questions are discussed concerning the education of the public, such as the need for instruction to women of all classes on care during pregnancy and labour and care of young children; instruction to men in essentials of the same, and instruction to boys and girls in primary schools on the same to a modified extent; baby shows; trained health visitors employed systematically in towns and villages, &c. The miscellaneous suggestions for improvement are important, and as follows:—

1. Women's hospitals should be more attractive, and more care should be taken to make labour conducted there absolutely safe.
2. We should specialise so as to eliminate painful labour as much as possible.
3. There should be hospitals for infectious diseases, with provision for puerperal fever.
4. Trained dais should be subsidised and should work in connexion with hospitals.
5. They should be provided with outfits for proper work.
6. Mothers should be provided with maternity packets.
7. Training of dais should be carried out by women doctors (or other teachers) specially set apart for the purpose. Every training school should be inspected.
8. Standards of training should be laid down, and especially a sufficient number of cases of labour conducted should be insisted on before examination.
9. An effort should be made to link up all present methods of training.
10. Maternity centres should be started; also milk depôts, baby clinics, and baby shows.
11. Prevention of puerperal fever should be taken up by the Anti-Tuberculosis League so saving two organisations.
12. Certificated dais should be allowed to bring their cases into maternity hospitals and conduct them according to rules, taking the usual fee from the patient.
13. Notification of puerperal fever should be required.
14. Free maternity homes should be provided.
15. Creches for young children should be provided.
16. State-aided maternity benefit is needed.
17. A Central Midwives Board for India is required.
18. A book should be prepared for girls' schools on the lines of "light, life, and cleanliness."
19. The organisations now engaged in war work should after the conclusion of the war take up the question of maternity welfare.

Class of women trained.—A point regarding which there is much difference of opinion is whether work among the hereditary dai class should be continued, or whether it should be given up and all effort concentrated on providing a better class of midwife.

There is a general agreement that this last would be the simplest and easiest solution of a difficult problem; but while the Surgeon-General and other officers of the Indian Medical Service in Bengal and the Inspector-General, United Provinces, give a definite pronouncement that this course should be followed, the majority of the medical women who discuss the question declare it impossible as a practical measure.

The opinion of most of the medical women is that for general improvement of childbirth in India work amongst hereditary dais must be continued, but that it is useless unless it is combined with some scheme of continued supervision of their work by means of midwife supervisors or health visitors. The registration and supervision of midwives is recommended in a large number of papers. The Inspector General, United Provinces, on the other hand, is of opinion that the day for registration and supervision in India is still far distant. The medical women who recommend the measure, however, do not probably intend that a Bill identical with the English Midwives Act of 1905 making registration and supervision everywhere compulsory should be immediately introduced into provincial legislatures, but rather that powers should be given to municipalities to introduce registration and supervision where public opinion is ready for it. Several municipalities have already started schemes which recognise this necessity, the dai being persuaded to submit to supervision by means of a notifying fee. These municipalities would probably be glad to have more power in order that the schemes might be more effectively carried out and the notifying fee either reduced or discontinued. Experience has shown, moreover, that in work among dais no amount of persuasion, kindness, or money rewards will bring about a successful result, unless combined with very definite orders from the representatives of Government. The measure about to be introduced into the Punjab is recommended to the notice of all local Governments. This provides for the registration and supervision of all dais and midwives in the province who receive a Western training, and it ensures a definite standard of training and examination.

Improvement of the condition of childbirth in India is a problem at least as difficult and at least as important as the prevention of plague; and it is only by patient work frequently unsuccessful and experiments constantly repeated that a successful issue can be expected.

As regards the class of women to be trained the committee feels the warmest interest in all efforts to train and assist midwives of a superior class but it feels that, until proof is given that the majority of women in a province, rich and poor alike are employing these midwives for natural labour, the funds of the Victoria Memorial Scholarships must be expended entirely for the improvement of the hereditary dai class.

It is felt that more might be done both by the Imperial and local Governments to relieve the terrible conditions, the suffering, and loss of life endured by so large a section of the population.

Statistics show that in recent years the birth-rate in India has been falling, with a tendency for the death-rate to rise. If the wastage of infant life is to be taken in hand the first step is undoubtedly improvement of the conditions of childbirth. Measures to provide milk depôts, creches, and baby clinics are of little use to children who die before or during birth, or within the first month after.

One very evident fact is the lack of statistics relating to childbirth. It ought not to be more difficult to discover the number of deaths following childbirth than the number following plague, and the discovery that certain cities were peculiarly affected in this way could be used as a strong incentive to their municipalities, and to their principal residents, to effect improvements.

The committee hopes that medical women will send information as to success or non-success, and from time to time further ideas and suggestions which may be of service.

It is proposed in future to publish the Victoria Memorial Scholarships Fund report as a booklet, separate from that of the Dufferin Fund, and to make it as far as possible an accurate account of measures taken for improvement of the conditions of childbirth in different parts of the country.

Maternity Nursing in London.

A recent meeting of the Central Council for District Nursing in London confirmed the findings of the conference held last June on the subject of maternity nursing in London, with special reference to the position of district nursing associations in relation thereto. This conference was attended by representatives of Government departments, of the London County Council and other municipal services of London, of the Central Midwives Board, by representatives of the medical profession, voluntary hospitals and district nursing associations, and by others interested in the subject. Sir William Collins, M.P., who presided, summed up the result under the three heads of the debate. There was a consensus of opinion: (*a*) That it is desirable that maternity nursing should be undertaken by district nursing associations in London. (*b*) That there should be coöperation with the hospitals for the purpose of nursing the extern maternity cases. There was some difference of opinion in regard to (*c*) the relation of maternity nursing to midwifery, and in particular whether it is essential that the maternity nurse should hold the C.M.B. certificate. The last part of this question has been practically settled by the decision of the Local Government Board that, in order to qualify for a grant under the Maternity and Child-Welfare Act, 1918, "the maternity nursing should be undertaken by a woman with the certificate of the C.M.B; failing this qualification the Board should be furnished with evidence of her competency if a grant is claimed." It appeared to the council that the possession of the C.M.B. certificate would be especially necessary if, and when, the maternity nurse was expected to attend at the time of the delivery.

A second conference was held on Sept. 30th, when the conclusions of the June meeting were discussed, the general opinion arrived at being that the nurses would willingly undertake the maternity district work, but owing to war conditions there was an insufficiency of staff for the purpose. The combining of maternity and general nursing was considered from experience to be safe. Night work was regarded as a possible difficulty to be overcome, and might require additional staff. The employment of home helps would be useful, but this should be apart from the associations. The difficulties of small associations and the single-handed parochial nurse might be met by federation of the smaller associations, or their affiliation to a central association for the supply of special nurses. The council has been in communication with the Local Government Board as to the conditions on which a grant might be forthcoming, and some practical outcome is expected.

MEMORIAL ON DIET AND INFLUENZA.—The Bread and Food Reform League has sent a memorial to the Local Government Board asking for public attention to be drawn to the following points: (1) That dietaries lacking in anti-neuritic vitamine found especially in the germ and aleurone cells of cereals; (2) that dietaries also lacking in anti-scorbutic vitamine, found abundantly in fruits and vegetables, *produce deficiency diseased conditions* which make people although apparently in excellent health physically unfit, and less able to resist epidemic infection; and (3) that a memorandum published by the Food (War) Committee of the Royal Society states that wrong methods of cooking impair the value of antiscorbutic vitamine. The memorial is signed by a number of medical men. Further particulars may be obtained from the honorary secretary of the league, Miss May Yates, at 37, Essex-street, London, W.C. 2.

Obituary.

ARTHUR CONNING HARTLEY, M.D., F.R.C.S. EDIN.

WE regret to announce the death of Dr. A. C. Hartley, of Bedford, which took place on March 5th, at the age of 54 years. He was the second son of the late William Hartley, of Comlongon, Dumfriesshire, and was educated at Edinburgh University, graduating M.B., C.M. in 1888. As a student he took honours in most of his classes, and entered largely into the life of the University, in the work of the Students' Representative Council, and in the direction of the rifle company of the Queen's Brigade, in which he obtained many shooting prizes. He obtained his "full blue" for running, drilling, and shooting. After qualifying he was for a year resident medical officer of Chalmers Hospital Edinburgh, and was also house surgeon at the Royal Maternity and Simpson Memorial Hospital, Edinburgh. In 1891 he took the degree of M D. with honours at Edinburgh University, and in 1893 became a Fellow of the Royal College of Surgeons, Edinburgh.

Dr. Hartley began his practice in Bedford in 1892, and he soon secured the confidence of a large number of patients in the town and county. He was a firm believer in post-graduate courses for practitioners, and paid frequent visits, during his holidays, to Edinburgh for this purpose. He was medical examiner and referee for a large number of life assurance companies and held the post of Admiralty surgeon for Bedford and district. In 1896 the Mayor of Bedford presented him with the testimonial of the Royal Humane Society for rescuing a girl from the flooded Ouse. Later he was elected president of the Bedford Medical Society, and in 1912 he presided over the South Midland Branch of the British Medical Association. He took an active part in starting the Bedford District Nursing Association and the Bedfordshire Rural Nursing Association, and acted for a number of years on the executive committee of the local branch of the Society for the Prevention of Cruelty to Children. His scanty leisure he spent in various forms of field sports—golf, tennis, shooting, skating, or curling. Dr. Hartley was enthusiastic on the subject of universal military service. He himself served 28 years in many capacities in the Volunteer and Territorial Corps under three Sovereigns, having taken his part at Queen Victoria's Edinburgh visit and at her funeral, and at the Coronations of King Edward VII. and King George V. In 1917 the King conferred on him the Territorial Decoration. He received King Edward's silver medal for long service in 1909, and was on service as major in the R.A.M C. (T.), attached to the Headquarters Staff of the East Anglian Royal Engineers, at the beginning of the war. In November, 1917, he relinquished his commission on account of ill-health. Dr. Hartley was a life-long believer in the principles of total abstinence from alcoholic drinks.

In 1902 Dr. Hartley married Miss Margaret Stewart, eldest daughter of the late Mr. James Stewart, and he leaves three daughters and one son.

RICHARD WHISH BRIGSTOCKE, M.R.C.S. ENG., L.M., L.S.A.

BY the death of Richard Whish Brigstocke, affectionately known as the "old doctor," which took place recently at his residence, Scole, Norfolk, there has passed away a well-known practitioner who, in his early days, formed one of the party sent out to Africa to find Livingstone, and who formed an interesting link with Sir Thomas Browne, of "Religio Medici" fame.

Mr. Brigstocke received his medical education at St. Bartholomew's Hospital in the years when the late Sir James Paget was warden, and afterwards enjoyed the personal friendship of that great surgeon. He qualified in 1859 by taking the M.R.C.S. Eng., L.M., and L.S.A., when he entered the Navy, in which service he remained till 1866. It was while engaged in operations for the suppression of the slave trade that he joined the party which went in search of Livingtone, and he afterwards spent some time with the famous missionary and traveller. On leaving the Navy Mr. Brigstocke went to Beyrout, where for 40 years he had a large and cosmopolitan clientèle. As an accoucheur, he acquired a wide reputation, and was frequently called in consultation to widely separated parts of Syria, often taking long journeys on horseback into the mountainous parts of the country. From 1870 to 1882 he was lecturer on obstetrics and diseases of women and children and medical jurisprudence at the Syrian Protestant College and Medical School at Beyrout, lecturing both in Arabic and English. He also spoke French fluently. For services rendered to the Turks during the cholera epidemic in 1875 he received from the Sultan the Order of the Medjidie, and for similar services to the Italian colony at Beyrout in 1896 he was awarded by the King of Italy the Chevalier Order of St. Maurice and Lazare. An enthusiastic gardener and woodman, Mr. Brigstocke spent his retirement in strenuous work of this kind, wielding the axe with skill and power. He leaves a wife, four daughters, and two sons, the eldest of whom has seen service with the R.A.M.C. in Egypt and France.

Dr. Michael Beverley, as a personal friend, writes:—

It will interest many of your readers to learn that the Brigstockes are descendants by marriage with the author of the "Religio Medici." It is recorded in the preface of the "Posthumous works of the learned Sir Thomas Browne, Kt., M.D., late of Norwich, the public is here presented with manuscripts for which we are obliged to Owen Brigstocke, Esq., grandson by marriage to the author." This is clearly seen on reference to the late Mr. Charles Williams's geneaology of Sir Thomas Browne. "Owen Brigstocke married Anne, the daughter and co-heiress of her grandfather, Sir Thomas Browne, who left his property to his grand-nephew, Owen Brigstocke." My old friend, although ignorant of his connexion with so distinguished an ancestor, told me that he was descended from this Owen Brigstocke, and promised to try to get the pedigree up-to-date. His long illness and death has prevented this.

The War and After.

CASUALTIES AMONG THE SONS OF MEDICAL MEN.

THE following additional casualties among the sons of medical men are reported:—

Capt. N. H. Owen, Rifle Brigade, died at Sheerness from pneumonia, third son of Dr. J. M. Owen, J.P., of Fishguard, Pembrokeshire.

Major H. C. R. Saunders, D.S.O., East Yorkshire Regt., previously reported wounded and missing, now believed killed on March 30th, 1918, eldest son of the late Mr. A. R. Saunders, F.R.C.S., of Kingston, Jamaica.

Lieut.-Commander G. S. Parsons, R.N., died at Portsmouth, sixth son of Dr. C. Parsons, of Tunbridge Wells.

Mr. F. C. Godding, died at Brisbane, Australia, from disease contracted at Anzac, son of Surg.-Gen. C. C. Godding, C.B., R.N.

THE HONOURS LIST.

The following awards to medical officers, for services in connexion with the military operations in Mesopotamia, are announced:—

C.I.E.—Lt.-Col. P. F. Chapman, I.M.S.; Maj. and Bt. Lt.-Col. H. J. Crossley, R.A.M.C.; Maj. and Bt. Lt.-Col. J. D. Graham, I.M.S.; Maj. and Bt. Lt.-Col. W. H. Hamilton, D.S.O., I.M.S.; Maj. (temp. Lt.-Col.) C. A. Sprawson, I.M.S.

MENTIONED IN DESPATCHES.

The names of the following medical officers are mentioned for distinguished and gallant services and devotion to duty in a despatch received from the Commander-in-Chief of the Mesopotamian Expeditionary Force:—

Army Medical Service. Col. (temp. Maj.-Gen.) A. P. Blenkinsop, C.B., C.M.G.; Col. S. F. St. D. Green.

Royal Army Medical Corps.—Temp. Capt. C. G. Adams; Capt. E. B. Alabaster; Capt. C. W. Armstrong; Temp. Capt. K. D Atteridge; Temp. Capt. T. Barbour; Capt. W. C. P. Barrett; Temp. Capt. B E. A. Batt; Temp. Capt. P. G. A. Bott; Capt. J. M. H. Campbell; Temp. Capt. J. M. Clements; Capt. W. MacC. Conley; Capt. (acting Maj.) F. C. Cowtan; Maj. and Bt. Lt.-Col. (acting Lt.-Col.) H. J. Crossley; Temp. Capt. L. W. Davies; Capt. and Bt. Maj. L. Dunbar; Temp. Capt. A. Felling; Lt.-Col. and Bt. Col. M. H. G. Fell, C.M.G.; Capt. G. Finch; Temp. Capt. R. Fraser; Capt. J. H. M. Frobisher; Capt. A. H. Gosse; Maj. (acting Lt.-Col.) R. Griffith; Capt. (acting Maj.) T. J. Hallinan; Temp. Maj. F. N. Holden; Temp. Capt. A. H. H. Howard; Temp. Capt. A. R. Jennings; Temp Capt. E Kidd; Capt. C. J H. Little; Capt. (temp. Maj.) A. G. J. Macllwaine, C.I.E.; Temp. Capt. C. G. Mackay; Temp. Capt. G. S. Marshall; Capt. and Bt. Maj. W. McNaughton; Lt. W. McWilliam; Temp. Capt. W. M. Menzies; Capt. J. P. Mitchell; Capt. J. J. Molyneaux; Capt. J. M. Morrison; Lt.-Col. (temp.-Col.) H M. Morton, D.S.O.; Capt. W. H. O'Riordan, M.C.; Capt. C. J. Penny; Temp. Capt. H. H. Raw; Capt. H G. Robertson; Capt. C. O. Shuckleton; Temp Capt. W. A. Shafto; Capt A. Shepherd; Temp. Capt. W. J. D. Smyth; Temp. Capt. E H. Udall; Capt. J W. Weddell; Capt. K. J. T. Wilson; Capt. J. H. Wiseman; Capt. P. A. With; Maj. T. J. Wright, D.S.O.; Capt. R. H. Yoland; Capt. J. R. Yourell.

Indian Medical Service.—Capt. H. W. Acton; Temp. Capt. F. B. Ambler; Maj. (temp. Lt.-Col.) W. M. Anderson; Lt. B. C. Ashton; Lt.-Col. W. R. Battye, D.S.O.; Lt.-Col. P. F. Chapman; Capt. E. Cotter; Capt. A. M. Dick; Lt.-Col. A. Fenton; Lt.-Col. F. W. Gee, C.I.E.; Temp. Capt. E. A. M. J. Goldie; Maj. and Bt. Lt.-Col. C. M. Goodbody, C.I.E., D.S.O.; Maj. and Bt. Lt.-Col. J. D. Graham; Maj. and Bt. Lt.-Col. W. H. Hamilton, D.S.O.; Lt.-Col. W. Lethbridge; Capt. R. B. Lloyd; Maj. F. P. Mackie; Lt.-Col. H. G. Melville, C.I.E.; Maj. J. Morison; Temp. Capt. S. B. Mukerjee; Capt. J. J. H. Nelson, M.C.; Capt. C. M. Plumptre; Maj. E. A. Roberts, D.S.O.; Maj. (temp. Lt.-Col.) C. A. Sprawson; Maj. J. Taylor, D.S.O.

Indian Medical Department.—2nd Cl. Asst. Surg. W. R. Bennett; 1st Cl. Asst. Surg. G. W. Cearns; 2nd Cl. Asst. Surg. M. G. Coombes; 1st Cl. Asst. Surg. A. W. Dyer; 2nd Cl. Asst. Surg. E. S. Feegrade; 1st Cl. Asst. Surg. H. J. J. Garrod; 2nd Cl. Asst. Surg. A. W. Hazle; 4th Cl. Asst. Surg. G. D. Rodrigues; 4th Cl. Asst Surg. W. J. Rowe.

In a despatch received from the Vice-Admiral, Dover Patrol, dealing with the operations at Zeebrugge and Ostend, in April and May last year, the medical arrangements are referred to in the following terms:—

I desire to make a special reference to the praiseworthy manner in which the medical officers and their staff, and volunteer helpers, devoted their skill and sympathy to those who were wounded in these operations. Fighting at such close quarters, the casualties were bound to be numerous, and the wounds likely to be severe. Staff Surgeon James McCutcheon, M.B., was the senior medical officer of the force. In an able report that officer outlines the work of his staff, and the circumstances in which it was done, and I trust that the Lords Commissioners will agree with me in thinking that no branch of the naval service surpassed in zeal and ability the efforts of the medical branch to prove itself worthy of its profession, and of the occasion. I have selected with difficulty from a number of very deserving officers the names of three to be representative recipients of such promotion as their Lordships may be able to award for these operations to the medical branch of the Royal Navy.

CIVIL MEDICAL PRACTITIONERS' WAR SERVICES.

Under date March 4th the War Office has issued the following list of civil medical practitioners whose names have been brought to the notice of the Secretary of State for War for valuable medical services rendered in the United Kingdom in connexion with the war:—

J. McK. Ackland; G. Alexander; C. W. Alford; C. M. Anderson; W. D. Anderson; W. M. A. Anderson; J. F. Atkins; S. E. Atkins; J. P. Atkinson.

W. Baigent; W. E. Baker; G. F. Barnes; W. R. Bates; R. A. Bennett; P. H. Benson; H. Bentley; H. W. Bethell; J. Black-Milne; R. H. Blaikie; J. F. Blood; C. Bolton; V. Bonney; H. Bott; R. O. Bowman; J. C. O. Bradbury; F. Brightman; T. B. Broadway; E. H. Brock; T. H. Brown; M. Bryson; H. M. Bundey; W. F. R. Burgess; M. Burnet; A. C. Burrows; H. B. Butler; W. B. Butler.

G. Y. Caldwell; J. E. G. Calverley; W. E. Cant; J. W. Carr; A. J. Carter; R. G. Carter; J. W. Caton; E. Cautley; W. L. Chubb; J. Chute; Miss I. M. Clarke; J. J. Clarke; T. W. Clay; P. P. Cole; L. Cole-Baker; D. W. Collings; E. G. Colville; C. T. T. Comber; C. J. Cooke; J. G. Cooke; H. P. Cosbadie; E. A. R. Covey; G. Cran; E. P. Cumberbatch; C. Curd; F. C. Curtis.

H. G. Dain; J. D. Davies; H. C. Dent; L. G. Dinon; L. C. T. Dobson; J. A. Drake; C. E. Drennan; D. Drummond; R. H. W. Dunderdale; M. A. Dutch.

H. F. Ealand; A. M. Elliot; W. F. Erskine; W. J. Essery; C. J. Evers; R. W. T. Ewart; H. L. Ewens; E. H. Ezard.

G. Fairs; E. Farr; F. Fawssett; G. W. B. Featherstone; R. A. Fegan; E. C. Fenoulhet; A. C. Ferguson; W. A. Fogerty; S. C. Fowler; T. W. Fowler; A. D. Fraser; A. M. Fraser; L. Fraser; A. L. Fuller; P. Furnivall.

M. H. Gardiner; A. T. B. Gavin; Miss G. Gazdar; H. W. Gell; W. D. Gimson; B. Glendining; L. G. Glover; H. J. Godwin; R. M. Going; T. A. Goodfellow; W. A. Gordon; T. P. Gostling; R. Grant; Miss E. Gray; H. T. Gray; G. R. Green; E. C. Greenwood; G. Grindlay; R. M. Grogono; C. N. Groves; G. Gunn; L. G. Guthrie.

G. R. Harland; H. Head; J. W. Heekes; W. Hern; H. T. Herring; C. M. Hewer; E. S. E. Hewer; T. B. Hickley; D. W. C. Hood; G. H. J. Hooper; S. B. Hulke.

J. Ingram; W. S. Inman.

A. Jackson; P. S. Jakins; J. R. Jeffrey; R. C. Jewesbury; R. G. Johnson; G. J. Johnston; G. Jonckheere (Louvain); S. E. Jones; J. F. Jordan; N. H. Joy.

D. Kennedy; F. W. Kennedy; J. C. King; T. S. Kirk; Miss A. Kirker; Mrs. A. V. Knox.

F. Lace; J. H. W. Laing; G. J. Lane; F. C. Langford; C. P. Lankester; J. B. Lawford; P. C. W. Laws; A. Lawson; C. F. Le Sage; E. E. Lewis; P. G. Lewis; J. E. Linnell; P. S. Lloyd; J. D. Lloyd; T. E. Lloyd; G. H. Lock; J. P. Lockhart-Mummery; H. L. Lowis; A. Lyndon; E. Lynn.

D. R. Macdonald; J. Macdonald; H. J. Macevoy; G. MacGill; H. H. B. Macleod; F. R. Mallett; H. Marshall; F. E. Marston; W. Martin; W. B. Maurice; L. T. McClintock; A. A. McConnell; K. C. McKenzie; H. L. McKisack; G. E. P. Melton; J. H. Menzies; J. Metcalfe; I. G. Modlin; A. P. Mooney; A. Morison; A. E. Morison; R. F. Morris; R. D. Mortherside; W. T. Mullings; R. A. Murray.

J. F. Nall; G. P. Newbolt; W. Norbury; A. E. Normington; W. W. Nuttall.

E. J. P. Olive; W. W. Ord; D. R. Oswald.

T. B. Pallett; F. S. Palmer; J. I. Palmer; T. W. Parkinson; A. R. Parsons; A. G. Paterson; E. le F. Payne; H. G. Pennell; E. V. Perry; J. P. Philip; T. B. Poole; J. F. Porter; J. C. Potter; R. H. Powers; G. L. Preston; W. A. Pride; E. L. Pritchard; B. G. Pulin.

R. M. H. Randell; R. F. Reeve; P. Rendall; J. Richardson; G. A. Roberts; Mrs. A. L. L. C. Robson; J. D. Robson; W. Roughton; A. R. P. Russell.

F. J. Sadler; H. Sainsbury; F. J. Sarjeant; G. J. Scale; R. R. Scholefield; C. R. Scott; E. W. Selby; H. T. Sells; R. H. Shaw; O. B. Shelswell; E. W. H. Shenton; D. A. Shields; J. Simcock; J. D. Sinclair; J. A. Small; C. W. Smeeton; G. Smith; J. A. Smith; Sir T. R. H. Smith, Bart.; J. C. Smyth; R. V. Solly; T. F. Southam; J. A. Southern; G. R. Sparrow; H. J. Spon; E. Stainer; L. E. Stamm; G. S. Stansfield; R. de S. Stawell; O. T. Stephenson; G. St. George; H. W. M. Strover; A. J. Swallow.

F. C. Talbot; J. G. C. Taunton; A. Tennyson-Smith; G. C. Thomas; W. E. Thomas; W. T. Thomas; A. Thompson; C. Thompson; J. Thomson; M. Thomson; N. F. Ticehurst; S. A. Tidey; H. T. M. Townsend-Whitling; R. H. Trotter; A. J. Troughton; R. Turner.

G. B. Wainwright; R. A. Walter; A. H. Warde; W. Washbourn, R. de C. Wheeler; W. S. Whitcombe; C. P. White; E. F. White; G. B. M. White; A. Wightwick; L. E. Wigram; S. M. Wilcox; R. Wilkins; D. J. Williams; H. C. Williams; J. A. Wilson; M. S. Wilson; G. M. Winter; G. V. Worthington; R. B. Wright, D. T. Wylie.

E. C. Young; J. C. Young.

OBITUARY OF THE WAR.

SAMUEL COWELL PHILSON, L.R.C.P. EDIN., M.R.C.S. ENG., C.I.E.,

COLONEL, ARMY MEDICAL SERVICE.

Colonel S. C. Philson, who died of pneumonia following influenza on Nov. 4th, 1918, at the age of 58 years, was son of the late Dr. William Philson, of Cheltenham. He pursued his medical studies at King's College, London, and at Edinburgh, graduating in 1883, and taking the M.B. degree in 1884, and joined the Army Medical Service—afterwards the Royal Army Medical Corps—in 1885. He took part in the Burmese and Chin Hills expeditions of 1889 and 1890, for which he received the Frontier medal and three clasps. In 1897 he was promoted to the rank of major, and was stationed at the Base Hospital, Rawal Pindi, during the Tirah campaign. In 1900 he accompanied the Earl of Hopetoun—afterwards Marquis of Linlithgow—to Australia, and remained on His Excellency's staff during Lord Hopetoun's tenure of the Governor-Generalship. In 1902 he was placed in medical charge of the special camp at the Alexandra Palace for Colonial troops who came to England to represent the overseas dominions at the late King's Coronation, and for this he received the King Edward Coronation medal. In 1905 he was promoted lieutenant-colonel, and in 1911, being again stationed in India, he was awarded the Coronation Durbar medal. He was promoted full colonel in 1915 and in August, 1916, was appointed Assistant Director Medical Services, Karachi Brigade, to reorganise the medical arrangements there after the "troop train tragedy." His successful work during the past two years has just been recognised by the award of the C.I.E., but the publication of this honour came too late for him to know of it before his death. A friend writes in the *Pioneer*: "'Sammy' Philson was a man of great administrative ability and was transferred from Lucknow to Karachi shortly after the Sind train disaster, since when he has been responsible for the whole of the medical arrangements connected with the war base at that port. In December, 1917, having reached the age for retirement, he should have retired by the order of the War Office, but at the request of the Commander-in-Chief (in India) he agreed to remain at his post in Karachi until the end of the war."

Colonel Philson married in 1896 the second daughter of Brigade Surgeon Lieutenant Colonel J. H. Condon, I.M.S., who survives him. He leaves no children.

Lieutenant FRANK P. Y. HUET, A.A.M.C. (Dental Services), who died from the effects of broncho-pneumonia on Feb. 3rd at No. 1 Australian General Hospital, Sutton Veny, was educated at Sydney Grammar School, New South Wales, and enlisted in the 1st Battalion A.I.F. Upon the demand for an increase of dental units in the A.A.M.C. Lieutenant Huet was transferred to the Dental Services and granted a commission on March 1st.

WILLIAM PEARSON COWPER, L.R.C.P. & S. EDIN.,
TEMPORARY SURGEON, R.N.

Temporary Surgeon W. P. Cowper, R.N., who died on Feb. 1st at the age of 38 years from illness contracted nearly three years previously while serving on board H.M.S. *Valiant*, was second son of Mr. William Cowper of Hendon, and formerly of Kirkwall. Educated at the Edinburgh Academy he took the Scottish triple qualification in 1903,

after which he filled the posts of house surgeon to St. Mary's Hospital, Plaistow, house physician to the West End Hospital for Nervous Diseases, house surgeon and house physician to the Hampstead General Hospital, and house surgeon and anæsthetist to the Royal Westminster Ophthalmic Hospital, where he was assistant surgeon at the time of his death. He had been in practice in London as an ophthalmic surgeon, but on the outbreak of war he was at once granted a commission as surgeon in the Royal Navy. He was first appointed to the R.N. Barracks, Devonport, in 1915 to the R.N. Hospital, Devonport, and later to the R.N. College, Keyham; in 1916 he joined H.M.S. *Valiant*. He was a keen sportsman, and was for several seasons one of the forwards of the 1st London Scottish Rugby team. In 1908 he played for the Barbarian team, and in 1915 captained a Navy team at Plymouth. Golf and fishing were also favourite pastimes, the latter of which he had an opportunity of enjoying when off duty during the time he served with the Grand Fleet at Scapa.

JOHN STANLEY COCKS, M.R.C.S., L.D.S.,
CAPTAIN, R.A.M.C.

Captain J. S. Cocks, who died on Jan. 29th at Beyrout from broncho-pneumonia following typhus, aged 29 years, was youngest son of Mr. J. W. Cocks, of Torquay. Educated at Mill Hill School and Guy's Hospital, he took his L.D.S. diploma in 1912, and on the outbreak of war offered himself as a dental surgeon and was refused. He took his Final Conjoint Examination in 1914 and joined the Special Reserve. He was attached to the 9th York and Lancashire Regiment and remained with them until June, 1915, when he proceeded to Alexandria and was attached to a hospital in Cairo. Early in 1916 he joined the 7th Mounted Brigade Field

Ambulance, which he accompanied to Salonika. After about 18 months in Greece and Macedonia the Ambulance returned to Egypt and was disbanded, the transport being torpedoed and sunk without loss of life on the voyage from Salonika to Alexandria. Captain Cocks then became attached to the 3rd Lowlanders Mounted Field Ambulance, and took part in the operations around Beersheba at the commencement of Allenby's drive into Palestine. At this time his health gave way and he was invalided back to the base, being in hospital at Port Said for some weeks. After recovering he was appointed to take charge of No. 1 Egyptian Detention Hospital, then at Gaza, but later at Jaffa and Beyrout. During his illness he was removed to the American College Hospital, where he was under the care of Dr. Graham until his death. He was in the Near East for three years and seven months without being granted any home leave.

Correspondence.

"Audi alteram partem."

THE POSITION OF THE DEMOBILISED PRACTITIONER.

To the Editor of THE LANCET.

SIR,—One of the conditions arising in the course of demobilisation does not seem to have received sufficient attention, that of the status and prospects of the medical practitioners who have been serving abroad. In spite of the efforts which have been made by the Committee of Reference of the Royal College of Physicians and of the Royal College of Surgeons, and of the Central Medical War Committee, to make the best possible temporary arrangements to preserve the interests of practitioners called to the service of the country abroad, the future of many of these is precarious.

We know that those medical men who have been working at home have generally behaved with the utmost fidelity towards those who have been called away, but it is not upon them alone that the future depends. Public bodies, it is hoped, will reinstate as far as possible to their former posts the medical officers who before the war held appointments in their service. It will be an important aid to the returning men if their former patients will continue to call them in, and it may be pointed out that the practitioners returning from service with the Army will come home with an enlarged experience and are likely to be of greater value than before to the patients to whom they return. They have in most cases been engaged in duties which have increased their professional knowledge and skill.

We are, Sir, yours faithfully,

NORMAN MOORE,
President of the Royal College of Physicians of London.
G. H. MAKINS,
President of the Royal College of Surgeons of England.

March 11th, 1919.

To the Editor of THE LANCET.

SIR,—May we ask attention to one of the problems of demobilisation which we think deserves sympathetic consideration from the general public? Many doctors who throughout the war have held commissions in the Navy, the Army, or the Air Force have now to face the question of return to civil practice. This is for them far from an easy matter. The natural growth of their practices has ceased during their absence. In spite of loyal help given, in most cases, by their colleagues—who deserve all thanks for their ungrudging efforts—and by professional committees, to hold together the practice in the interest of the absentee, the normal wastage due to deaths, changes of residence, &c., has had the effect of materially reducing the practice from what it was in 1914. Beyond such unavoidable influences there is risk of curtailment from other causes.

It is known to us that many of those who have been absent with the Forces of the Crown view their future with grave anxiety. In a profession like medicine, where the work is essentially personal, the future of those men evidently depends largely on the attitude of the general public. It is greatly to be hoped, therefore, that every patient will feel it an honourable duty to return, whenever possible, to his old doctor, and that public institutions will re-instate, as far as they can, to their former positions those medical officers who have sacrificed so much at the call of the Empire.—We are, Sir, yours faithfully,

R. W. PHILIP,
President of the Royal College of Physicians of Edinburgh;
R. MCKENZIE JOHNSTON,
President of the Royal College of Surgeons of Edinburgh.

Edinburgh, March 11th, 1919.

THE ASSOCIATION OF PANEL COMMITTEES AND NOTIFICATION FEES.

To the Editor of THE LANCET.

SIR,—I have to inform you that at their last meeting the Executive Committee of the Association of Panel Committees resolved:—

That the committee are of opinion that, in view of the fact that the reduction in fees for the notification of notifiable diseases was to be

regarded as a war measure, the fee for such notifications should be reduced from 1s. to 2s. 6d forthwith; and that the President of the Local Government Board be so informed.

The committee regret that medical men as a class should be marked out for a decrease of remuneration in such times as these.

I am, Sir, yours faithfully,

B. A. RICHMOND,
Secretary.

Staple House, Chancery-lane, W.C.,
March 10th, 1919.

A PUBLIC DENTAL SERVICE.

To the Editor of THE LANCET.

SIR,—In your issue of March 8th you commented, in a leading article dealing with the report of the Departmental Committee on Dental Practice, on the proposal to establish a Public Dental Service. Sect. XII., par. 135 of the Departmental report runs as follows:—

"If it is accepted that it is the duty of the State to ensure, in the national interest, that its citizens shall be maintained in a state of good health and working efficiency, we have no hesitation in stating that adequate arrangements for keeping the teeth of the people in a sound condition are one of the essentials to this end."

The report then proceeds to consider the matter under two headings: (1) treatment for children; (2) treatment for adults. With the former I do not propose to deal, but with reference to the latter I would call your attention to an article written by me, and published in *Public Health* of April last year; this was reprinted in the *British Dental Journal* in the following September, and has caused considerable interest and controversy, owing chiefly to the fact that the appalling condition of the mouths of the masses of the population was not appreciated by many of the correspondents, who mostly objected to the comparatively small provision made for conservative dentistry and the emphasis laid on the extraction of septic teeth, to furnish a clean mouth, and the provision of dentures.

Now in this report it is expressly stated that—

"Satisfactory conservative treatment of the teeth of the present adult population is not possible owing to past neglect; a large amount of dental work is, however, needed for extractions and the provision of dentures."

The scheme drawn up by me was the result of considerable experience as a command dental inspector in the Army, I having been chiefly instrumental in bringing about the reorganisation of the dental treatment in the service. This was accomplished by taking the work out of the hands of the civilian dentist, which was both unsatisfactory and expensive, and undertaking all the work by whole-time Army officers. The pivot of the scheme was a large central workshop for the provision of dentures, and dental officers with clinics in the camps and towns where troops were stationed, the impressions and bites being taken in the clinic and sent through the post to the central workshop and the finished denture returned to the clinic. This method of centralising mechanic work proved a great success so far as speed, efficiency, and economy were concerned, and the workshop in my command produced about 80,000 dentures in three years, all of a very high character.

In my original article I gave, with permission of the War Department, my balance-sheet for two years' working, showing that these dentures had been made at a workshop cost of 7*s.* 6*d.* each, and in certain months this had been as low as 5*s.* 6*d.*, and I pointed out that with a larger turnover this could be reproduced under civil control. I then proceeded to sketch a scheme for a State service, showing how, if these were sold for 15*s.* each to the public, the surplus of payments over cost would be sufficient to run a service, doing extractions and fillings free of charge, without going to the Treasury for a grant. I purposely "sailed as near the wind" as possible, "keeping my figures and estimates as low as I could, so as to arrest attention and cause controversy, and in this I succeed beyond expectation. As an answer to criticisms one of my dental officers, Mr. Percy Millican, and myself recast my balance-sheet, and in an article published under his name in the *British Dental Journal* of Feb. 15th last, we have what I believe to be a scheme, sound financially, stable, and one that would be acceptable to the majority of the profession. This, with certain extracts from the paper, I append.

The following is an estimated prospectus for an area dentally served by a series of clinics, under the same inspectorate, with a central workshop capable of supplying 70,560 dentures for 42,336 patients, and completing 212,562 fillings per annum.

Receipts.	£	*Expenditure.*	£
70,560 Dentures at £1 10*s.*	105,840	2 Inspectors, salary at £900	1,800
212,562 fillings without fee ...	—	Insurances for pensions and sickness	650
		20 senior dentists at £600	12,000
		Insurances, bonus and sickness ...	2,000
		50 junior dentists at £450	22,500
		Insurances, bonus, and sickness ...	4,000
		*Mechanics' pay, bonuses, and insurance	29,240
		Upkeep of surgeries	6,000
		Upkeep of workshop	1,000
		Cost of materials	17,640
		Central administration...	2,000
		Balance	7,010
	£105,840		£105,840

* *Mechanics' Pay, &c.*

	£
Workshop superintendent, salary at £450, pension, and sickness insurance	620
Ten foremen mechanics at £250, pensions, and insurance ...	4,450
60 A class mechanics at £200, insurance for bonuses...	14,560
40 B class mechanics at £156, insurance for bonuses	7,280
Sickness insurance for A and B mechanics	800
20 A class boys at £35; 20 B class boys at £26; insurances for bonus and sickness	1,550
	£29,240

The points to be borne in mind in reading this prospectus are chiefly as follows:—

1. Each dentist works 33 hours a week, there being 49 weeks to the working year.

2. Each dentist doing conservative work only is able to average three fillings an hour.

3. The average time taken to prepare a mouth for dentures (fillings excepted) is one hour per patient.

4. A foreman mechanic assisted by ten mechanics and four boys can complete 144 dentures a week.

5. The average ratio of "prosthetic" patients to dentures is as 3 : 5 (some patients needing two).

6. The inspectors, workshop superintendent, and foremen mechanics would be life servants of the Service, retiring on a pension after 25 years' service, whereas the dentists and junior mechanics would contract for a limited period and receive a bonus on retirement, or the option of filling vacancies on the permanent staff.

If such a scheme were adopted under State guarantees we could in a limited number of years give clean mouths to the people, with the improvement in health and efficiency which your readers will appreciate, at the minimum cost to an overburdened Treasury. Its educating influence with the masses would be enormous, the improved professional outlook would attract the right class of student, the unqualified (to be taken on the Register) would work under a scientific inspectorate, to the advantage both to themselves and their patients, and, above all, the very elasticity of the scheme would allow a universal service to be built up which could, in the future, take over the necessarily increased conservative treatment for a dentally educated public, which, when dentures on this enormous scale were no longer needed, could be financed out of the insurance benefit by a very small additional contribution which the beneficiaries would, by then, be willing to pay.

I am, Sir, yours faithfully,

F. W. BRODERICK, M.R.C.S., L.R.C.P., L.D.S. ENG.,
Major, R.A.M.C.

Bournemouth, March 9th, 1919.

TRIMETHENAL-ALLYL-CARBIDE IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—My attention was drawn to trimethenal-allyl-carbide, which is manufactured by Clement and Johnson, chemists, 13, Sicilian-avenue, London, and I was struck by their announcement that no complications occurred in influenza if this remedy were used early enough. So with a perfectly open mind I sent for half a gallon and began the treatment of all influenzas occurring amongst my staff at the Borough Sanatorium for Infectious Diseases and in those admitted as patients to that institution. My experience has been very limited, but I can certainly say that where the remedy was given during the first day or two of the disease there were no complications, and all made very satisfactory recovery. In such a terrible visitation as we had at that time (October to December, 1918) I felt glad to try a remedy that would act

as a prophylactic or curative agent in the disease. I wrote to Messrs. Clement and Johnson asking them if they would give me the names of any medical men who had used the drug. They did do so, and I wrote them with the enclosed questionnaire. They all answered these questions with the exception of one medical man who, you will remember, had a letter in THE LANCET a good many weeks ago on the same subject. Those who replied in nearly every case sent me very full information as to what they had done. I have made extracts from all these replies and I am sending them to you, hoping that you will be good enough to insert them in THE LANCET at an early date, and I shall be glad if you would ask that any other medical men who have used "yadil" in influenza would give their experience. It is only by a method of this kind that we can arrive at the truth as to the efficacy of the drug when given in influenza.

I am, Sir, yours faithfully,

Town Hall, Sunderland, Feb. 20th, 1919. H. RENNEY.

*** Dr. Renney sends us extracts of letters which he has received from 10 doctors who have been using yadil, and who have answered the questions which he sent to them. The general conclusions may be summarised somewhat as follows:—

1. *In about how many cases of influenza have you used "yadil"?*—Information has been received from doctors of 1623 cases of influenza which have been treated by yadil.

2. *What was the dose given to adults, and how often?*—The dosage varied between 15 minims and half an ounce. The majority preferred to give 3l every three hours or three times a day. One observer gives ℥15 to 30 every four hours, and considers that larger doses are of no additional value; another gives 3l three times a day to 3½ every four hours or three times daily, well diluted, and says that he has never had any signs of overdose. In some cases the medicine is ordered to be given before food, in others, either immediately before or afterwards, in others, no definite time for administration is given.

3. *In how many of these cases was treatment by "yadil" commenced on the first or second day of the disease?* From two doctors no information was given on this point. In about 915 cases yadil was given during the first or second day of the disease.

4. *Were there any complications in cases treated early by "yadil"?*—Of the 915 cases which were treated early by yadil six developed complications. Of these, four were cases of slight bronchitis, one was a delicate woman with heart disease in whom pneumonia supervened, and the sixth was that of a man who went out of doors against orders.

5. *If so, what other remedy was given for the pneumonia? Creo ote, either with or without pot. iod? Parke Davis's pneumonia phylacogen? Influenza vaccine (Pfeiffer's bacillus, pneumococcus, streptococcus)?*—One doctor says: "In cases met too late garlic plus pot. iod. and digalen were given for pneumonia."

6. *In your cases of influenzal pneumonia how many recoveries had you under "yadil" treatment?*—Only three doctors give information on this point. One had four cases of pneumonia, three of which recovered. In the fatal case yadil was not given regularly. Another reports 18 cases of influenzal pneumonia, all of which recovered. Only one had the drug before becoming desperately ill. Most of these cases were very inadequately nursed; many could not obtain the necessary milk, and many could not have the necessary fresh air. Another had two cases of pneumonia in his own family. Yadil was not commenced until several days had elapsed. Both recovered.

7. *Any other information.*—"A combination of aqua menth. pip. and aqua chlorof. masks the odour of yadil." "In three cases yadil had to be discontinued, as it seemed to produce bowel irritation. He generally used yadil in combination with sodæ sal." ED. L.

THE ESSENTIAL PRINCIPLES OF SUCCESSFUL MEDICAL ADMINISTRATION.

To the Editor of THE LANCET.

SIR,—Whilst it may be well at all times to keep in view the duties of the medical profession—the members of which are probably more loyal to duty than are human beings engaged in any other pursuit—would it not be better at this juncture to insist a little more upon the peculiar and vital rights of "the profession" itself? To me the constant repetition of "the duties" of the medical profession, and the apologies which seem to follow any mention of its own rights, smacks of hypocrisy. We, the present generation of medical men, must realise that we are the trustees of a noble function; and that upon us, who alone know this function, devolves, as surely as does the care of the stricken, the duty of ensuring, as far as lies within our power, that the conditions under which, and the men by whom this function in future will be exercised, shall not be such as will menace the efficient performance of it.

Dr. W. Gordon in your issue of March 1st has enunciated "four points" which are vital. With singular precision and breadth of view he has outlined the essential first principles of medical professional efficiency. Let any one of these be abused in practice, and sooner or later the function of the profession will be impaired. If we do not demand of the candidates for medical licence high standards of general education, and for those who obtain it the same emoluments and freedom which are enjoyed by men of ability, character, integrity, and education in other fields of endeavour, the status of the profession will certainly fall, and it will cease to attract to it the only class of men to whom should be entrusted its sacred functions. The results to humanity it is needless to elaborate.

Surely our duty is clear. If impending or future legislation is calculated to produce these results we must be in a position to guide and re-direct it. For this purpose concerted action of the present members of the profession is imperative. If we cannot prevail upon the people's Parliamentary representatives to safeguard what is at once the interest of medicine and of the people, we must have an effective organisation of our own. If only a trade union is effective in these socialistic days, then it must be considered.

We must insist upon the rights of the profession as much as upon its duties, for if the first are ignored, the latter will cease to be fulfilled. We must not fear the charges of self-interest which may be levelled at us. There are truly occasions on which *apparent* egoism is in reality altruism. The rescuer is not egoistic when he beats into insensibility the clutching drowning man whom he would save. The would-be husband is not egoistic when he insists that his intended wife, whose future he desires to be happy, must be one who loves him dearly. In such instances apparent egoism is in reality the essential foundation of benevolent altruism. So is it at this juncture with our profession. We must insist that it be not hampered or harmed by the ill-directed acts of those whom it is verily its religion to save. We must see to it that no legislation be effected which will render the life or working conditions of the medical man such that medicine will cease to attract to it men of that high integrity, character, education, and honour to whom alone the inexorable "laws of necessity" require that the functions of an exalted and sacred calling must ever be entrusted.

I am, Sir, yours faithfully,

Milford, Surrey, March 3rd, 1919. W. J. GRANT, M.D., &c.

DISLOCATION OF TEETH.

To the Editor of THE LANCET.

SIR,—With reference to the two cases of dislocation of teeth reported in THE LANCET of March 1st by Dr. H. M. Savery the following case will perhaps prove of interest. Corporal I. fell whilst lifting an aeroplane engine and struck his face against a projecting part. He sustained a cut tongue and one of his upper central incisors was knocked out. He reported to me immediately, bringing the tooth with him, and as it looked quite clean I at once simply replaced it, exerting firm pressure. After suturing the tongue and arranging for him to have milk diet for some days I sent him back to work. This took place in September last, and upon examining him to-day prior to his demobilisation I found the tooth quite firm, and he informed me that for months past he has been able to bite with it in the ordinary way and without pain or discomfort. I find, however, he has had two "gumboils" since the accident. These have left no trace, and at the present time there is no sign of inflammation, and the man is quite satisfied with the result. I may add that his upper incisors are very large and prominent.—I am, Sir, yours faithfully,

WALTER H. ANDERSON,
R.A.F., Shoreham-by Sea, March 3rd, 1919. Captain, R.A.F.M.S.

ROYAL DEVON AND EXETER HOSPITAL.—The annual meeting of the friends of this institution was recently held. The committee has decided to erect a new wing to the hospital, primarily for the reception and treatment of discharged soldiers and sailors, and secondarily to provide additional accommodation for young children, &c. An appeal will shortly be made to the residents for £20,000 for the purpose of carrying out the scheme.

WHILE it is now becoming quite common for women to secure seats on the governing authorities, the election of Dr. Florence Erin Smedley to the Worthing town council on March 4th provides the first instance in the county of Sussex of a woman doctor becoming a town councillor. Mrs. Smedley has for some time been acting medical officer of health for West Sussex, also school medical officer. She took her degrees in London in 1905, and was at one time surgeon at the Children's Hospital, Sheffield.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Ministry of Health Bill.

IT was not found possible to commence the Committee stage of the Ministry of Health Bill on Tuesday, March 11th, as originally contemplated.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 5TH.

Women Medical Officers in Military Hospitals.

Mr. ACLAND asked the Secretary for War whether he had considered the disabilities suffered by women medical officers employed in military hospitals owing to their not being allowed, under the Army Act, to hold Army rank; and whether he would have this legal disability removed in view of the pledge in the Government's election manifesto to remove all existing inequalities in the law as between men and women.—Mr. CHURCHILL replied: I am not aware that women doctors employed in military hospitals suffer disabilities on this account. A large number of civil medical practitioners are employed full time in such hospitals under exactly similar conditions. As regards the latter part of the question, it is not proposed to introduce legislation on this point during the present session.

Physicians' and Surgeons' Voluntary War Service.

Replying to Viscount WOLMER, Mr. CHURCHILL stated that he regretted that he could not publish a list of physicians and surgeons who had given voluntary service at military and auxiliary hospitals during the war and the periods for which they had given their services, as there was no list of the kind available.

THURSDAY, MARCH 6TH.

Lunatic Asylum Discharges.

Captain TUDOR-REES asked the Pensions Minister whether it was in conformity with his instructions for parish doctors to certify a discharged soldier or sailor for a lunatic asylum; and, if so, whether he would abolish this practice, which attached a taint of pauperism to the patient, and would order that before a discharged man was removed to an asylum he should be certified by a medical board of not less than three members.—Sir L. WORTHINGTON-EVANS answered: The Lunacy Acts require a certification to be made by registered medical practitioners; the medical practitioner may happen also to be the parish doctor, but it would only be as registered medical practitioner and not as parish doctor that his services would be required. I am sending my honourable and gallant friend a copy of a circular issued to local committees last year, in which the procedure to be adopted for certification is explained.

Captain TUDOR-REES: Will the right honourable gentlemen promise to consider the proposal with regard to discharged men having to be certified by a board of not less than three medical men?—Sir L. WORTHINGTON-EVANS: If the honourable gentleman will do me the honour of reading the circular he will see that steps are taken to keep the patient from all Poor-law taint.

Tuberculous and Shell Shock Cases.

Sir M. BARLOW asked the Pensions Minister whether any and, if so, what effective steps had been taken for the general open-air treatment of tuberculous and shell shock cases by means of farm colonies or otherwise; whether he had approached the Board of Agriculture in the matter; and, if not, whether he would consider, with the Board of Agriculture, the appointment of a small interdepartmental committee, with an outside chairman, to consider the whole matter.—Sir L. WORTHINGTON-EVANS answered: I am making arrangements for the treatment of shell shock cases on the lines suggested. At the present disabled soldiers suffering from shell shock are admitted to military neurological hospitals, where in nearly every case land is available and is utilised for this treatment. With regard to tuberculosis, I am taking steps in conjunction with the President of the Local Government Board to appoint such a committee as my honourable friend suggests. All the Government Departments concerned are being taken into consultation.

MONDAY, MARCH 10TH.

Grants for Medical Referees.

Mr. JOSEPH JOHNSTONE asked the Secretary to the Local Government Board whether he was now prepared to recommend to the Treasury that the supplementary grants approved of by Parliament in August, 1914, for medical referee, consultants, &c., supplementary medical services, and nursing grants, should now be paid; and whether he would be prepared to consult with the representatives from societies and Insurance Committees as to the administration of these special grants.—Major ASTOR (Parliamentary Secretary to the Local Government Board) replied: Preliminary conferences are at the present time taking place between representatives of the medical profession and the Commissioners preparatory to a general review of the medical services for insured persons including questions of possible extensions. When the results of these conferences are available and of further conferences on the same subject with representatives of Approved Societies and Insurance Committees, I hope to be in a position to consider what action can best be taken in regard to special grants of the kind referred to in the question.

Salaries of Irish Poor-law Medical Officers.

Sir WILLIAM WHITLA asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been called to the conditions of service and the absence of a uniform graded scale of payment to Poor-law medical officers in Ireland; and whether he proposed to take any steps to improve their conditions of service with a view of provision being made therefor in the Ministry of Health legislation.—Mr. MACPHERSON answered: The Local Government Board have urged all the boards of guardians throughout Ireland to make graded scales of payment to the Poor-law medical officers, with the result that 143 boards out of a total of 154 have granted improved remuneration to their medical officers. There are only 11 boards of guardians which have not improved the salaries of their medical officers, and these are again being urged to adopt graded scales of salary. With regard to the latter part of the question it will receive my consideration.

Ministry of Health for Ireland.

Mr. DEVLIN asked the Chief Secretary to the Lord Lieutenant of Ireland whether he had received a resolution from the National Association of Insurance Committees in Ireland, representative of 900,000 industrial workers, demanding the establishment of a separate Ministry of Health for Ireland; and whether, in view of this and other recommendations from similar representative bodies throughout the country, he would consider the advisability of carrying out the suggestion contained in the resolution.—Mr. MACPHERSON replied: The resolution referred to has been received. The Government was strongly urged by very important sections of the medical profession in Ireland and by Irish representative societies and bodies interested in health matters to extend the provisions of the present Bill to Ireland, and having regard to such representations agreed to do so.

Whisky for Medical Purposes.

Replying to Captain Sir B. STANIER, Mr. MCCURDY (Parliamentary Secretary to the Ministry of Food) stated that the Food Controller was satisfied that the release of an additional 50 per cent. of spirit recently sanctioned was resulting in a very material increase in the quantities available for the general public; and that it should be normally possible for spirits to be purchased, at any rate in small quantities, when required for medical purposes.

Qualification of Apothecaries' Assistants.

Sir JAMES AGG-GARDNER asked the Home Secretary whether he could now state what action, if any, had been taken under Section 4 (b) of the Poisons and Pharmacy Act, 1908, to enable certified assistants to apothecaries to be registered as pharmaceutical chemists or chemists and druggists.—Mr. SHORTT (Home Secretary) replied: This matter is now under the close consideration of the Pharmaceutical Society, and it is hoped that before long a by-law in the sense indicated will be submitted for the approval of the Privy Council.

Influenza and Cholera in Bombay.

Mr. BENNETT asked the Secretary for India whether he would give the latest information that had reached him as to the recent epidemics of influenza and cholera in the city of Bombay, together with the number of deaths from cholera in that city, and the total number of deaths from influenza in India in 1918 and the present year.—Mr. FISHER (on behalf of Mr. MONTAGU) answered: The Secretary of State has received the following telegram from the Government of India: The first influenza epidemic in Bombay city was in June last, and was responsible for over 1600 deaths; subsequent virulent outbreaks occurred in September, October, and early in November, during which period the mortality in Bombay city exceeded the normal by 14,678. Besides bacteriological investigation, relief measures consisted of treatment in hospitals, house-to-house visitation, free supply of milk and woollen jackets to prevent pneumonia, opening of roadside dispensaries in several wards, and supply of free medicine. Cholera appeared in epidemic form during the second week of December and continued till the third week of February. The disease was mainly confined to mill districts, and recent strikes not only aggravated it but prolonged its duration. Deaths reported

in Bombay city from cholera during the period number 9589. In view of the scarcity prevailing in neighbouring districts steps were taken to segregate immigrant labour in special camps, &c. Deaths from influenza in India as a whole in 1918 are calculated at 5,000,000 for British India, and 1,000,000 for Indian States.

Oatmeal and Influenza.

Mr. STURROCK asked the Food Controller whether he was aware that widespread dissatisfaction existed in Scotland over the price of oatmeal, still the staple food of the great bulk of the people; whether it was the case that oatmeal costs at least 50 per cent. more than flour; whether the health-giving properties of oatmeal were such that with the present danger of the influenza epidemic it was urgently desirable that the price of oatmeal should be brought down to a better standard; and whether he could promise early action in this matter.—Mr. MCCURDY replied: It is the case that at the present time the price of oatmeal is greater by approximately 50 per cent. than that of flour, and I hope that it will be possible to make an early announcement of a reduction of price. I am not, however, aware of the widespread dissatisfaction to which the honourable Member refers.

The Opium Convention of 1912.

Sir J. AGG-GARDNER asked the Prime Minister whether he would state what action had been taken, or was in contemplation, with a view to bringing before the Peace Conference the need for international coöperation in putting into force the articles of the Opium Convention of 1912 for the control of the production and distribution of cocaine, morphine, heroin, opium, and other drugs of addiction.—Mr. HARMSWORTH (Under Secretary for Foreign Affairs) answered: His Majesty's Government hope to be able to bring this question before the Conference with a view to the adoption of a resolution binding the Powers represented at the Conference to the speedy enactment and enforcement of the laws, regulations, and measures contemplated by the Opium Convention of 1912 for the purpose of confining to medical and legitimate purposes the manufacture, sale, and use of opium, morphine, cocaine, and similar noxious and habit-forming drugs, such a resolution to be made binding on the enemy Powers.

TUESDAY, MARCH 11TH.

Demobilisation of Doctors and Nurses.

Mr. LEONARD LYLE asked the Secretary for War whether, in view of the fact that there were still 9593 doctors and 20,141 nurses in the Army, he would arrange for at least 500 of the former and 2000 of the latter to be granted immediately indefinite leave pending formal demobilisation, so that their services might be utilised in coping with the serious amount of illness amongst the civil population.—Captain GUEST (on behalf of Mr. CHURCHILL) answered: As my right honourable friend explained to the honourable Member a week ago, every endeavour is being made to release as many doctors and nurses as can be spared. It is considered that if the proposal to give leave to doctors and nurses pending demobilisation were concurred in, it would seriously interfere with the steps that have been taken to release all those whose services can be spared. The latest returns available give the total number of trained and untrained nurses demobilised as 7441 since the armistice, and steps have been taken to demobilise large numbers of medical officers. This has now become possible owing to the removal of certain restrictions which delayed demobilisation.

Institutions for Mental Defectives.

Sir KINGSLEY WOOD asked the Home Secretary whether he would state how many institutions had been established under Section 35 of the Mental Deficiency Act for defectives of dangerous and violent propensities, and the number that were available to-day for such cases.—Mr. SHORTT (Home Secretary) replied: Three such institutions have been provided by the Board of Control. The first at Farmfield is intended for females only and is fully available. The second at Warwick is available for females only, but males will also be received there as soon as staff and houses can be provided. The third at Moss Side is at present in the occupation of the War Office, but the Board of Control hope that it will be available in a few months for the reception both of male and female patients.

DEATH OF DR. C. H. WISE.—Charles Henry Wise, M.D. Irel., L.R.C.P., M.R.C.S., L.S.A., J.P., died recently at Launceston, Cornwall, in his sixty-fifth year. The deceased was the eldest son of the late Mr. C. P. Wise, architect, of Launceston. He practised at Walthamstow, London, for many years, he held many public appointments, was deputy coroner for one of the Essex districts, a barrister-at-law, and a justice of the peace for Essex. He took a great interest in public affairs at Walthamstow, and was formerly a mayor for the borough. His health broke down some few years ago, and since then he has resided at Launceston.

Medical News.

OXFORD OPHTHALMOLOGICAL CONGRESS.—The congress will assemble at Keble College, Oxford, on the evening of Wednesday, July 9th, and meetings will be held on the following Thursday and Friday. A discussion on Preventive Ophthalmology will be opened by Mr. J. Herbert Parsons on Thursday. Friday will be given up to papers and demonstrations of cases. The annual general meeting will be held in the evening of July 10th. Members desirous of taking part are invited to communicate with the honorary secretary, Mr. Bernard Cridland, at Salisbury House, Wolverhampton.

SPECIAL POST-GRADUATE COURSE: LONDON SCHOOL OF MEDICINE FOR WOMEN.—In conjunction with the Fellowship of Medicine the London (Royal Free Hospital) School of Medicine is arranging a special post-graduate course on the Medicine and Surgery of the Liver and Gall-bladder. The lecturers are Dr. M. F. Lucas Keene, Dr. W. C. Cullis, Mr. J. H. Gardner, Dr. F. Ransom, Dr. Douglas Firth, Mr. Joseph Cunning, Mr. James Berry, Mr. Willmott Evans, and Dr. M. Schofield, and practical demonstrations will be included in the course. The first class will be given on Monday, March 17th, at 10 A.M., at the Royal Free Hospital, and the course will continue over two weeks following at the Hospital and at the Medical School, 8, Hunter-street, London, W.C. 1. Further particulars from Miss L. M. Brooks, warden and secretary, at the above address.

ROYAL SUSSEX COUNTY HOSPITAL.—Speaking at Hove, at the annual meeting of the Royal Sussex County Hospital, on Feb. 27th, Mr. R. Ball Dodson, chairman of the governors, announced that the cost per bed occupied in 1918 reached £116; this was £22 per bed more than in 1917, while the cost in 1917 was itself £22 higher than in 1913. The hospital was called upon to deal during 1918 with 173 fewer soldier and sailor cases than in the previous year, but the institution's war record stood at nearly 3300 patients. The War Office, it was stated, had just sanctioned demobilisation of 50 beds. The year 1918 ended free from debt, thanks to the marked success of the emergency fund, for which an appeal was made by Earl Brassey, president, and the trustees. The sum of £10,554 10*s.* 10*d.* was received, and thus the deficit at the close of 1917 was liquidated. A permanent expenditure of 25 or 30 per cent. above pre-war figures is anticipated in the future. On the subject of venereal diseases the annual report referred to the present arrangement for the treatment as "temporary and provisional," and Mr. Dodson hoped the local authorities interested would consider the situation with a view to future provision without delay. While the hospital did the correct thing in founding the clinic, as it did at the request of the Local Government Board in a time of crisis, Mr. Dodson said it would be doing the wrong thing to continue the work under present conditions for a longer period than was necessary for the local authorities to make proper provision for its inevitable development. In view of the ever-increasing work he did not think the clinic should be continued under present conditions for more than another year. Personally, Mr. Dodson declared himself of the opinion that there was very little prospect of these diseases being stamped out until they were made notifiable.

ASSOCIATION OF PUBLIC VACCINATORS.—The annual meeting of this association was held on Feb. 14th, Mr. J. Foster Palmer, the President, in the chair. The President gave an address on "Our Foes: Psychical and Physical." Our psychical foes, of course, arose from the strange psychological character of the German race. It was held by certain of the Stoics that all who were driven to any disastrous action through their vicious folly or blind ignorance of known facts or sequences were insane. This definition, as Horace points out, may include entire nations as well as their rulers. Is it not possible that some psychological processes similar to that which exercised the minds of the Stoics may have evolved in certain rulers and nations during the nineteenth and twentieth centuries among the areas of Western civilisation? But we are face to face with a far more formidable foe on the physical plane in the influenza microbe which is now making such havoc in many countries. The importance of special attention being directed to this organism is evident on account of the well-known fact that epidemics of influenza have usually been followed by other epidemics of a more severe type. Is this the result of microbic evolution, of a change of type in the organism resulting in one of a more severe and virulent character, or is it only that the vitality of the victims of influenza has been so undermined that they fall an easy prey to other forms of

zymotic disease? The question is by no means a simple one, as there appear to be two different, and apparently opposite, conditions which favour attacks of influenza. One is a condition of reduced vitality from any depressing cause, and the other is a prolonged freedom from microbic infection, leading to loss of the immunity conferred by repeated slight attacks of microbic disease—a condition known as auto-inoculation and well recognised in the treatment of tubercle. The microbic-free overseas contingents suffered more severely and in greater proportion than those already in the trenches. In addition to bacterial research, notification of influenza ought to be generally insisted on, supplemented by a series of questions on the clinical aspect of cases, which might serve to shed some further light both on the prophylactic and curative treatment of the disease.

THE annual court of governors of the Royal Hospital for Diseases of the Chest, City-road, London, will be held at the Mansion House on Tuesday, March 18th, at 3.30 P.M.

THE fiftieth annual general meeting of the governors of the Royal National Hospital for Consumption, Ventnor, will be held at 33, Portland-place, W., on Wednesday, March 19th, at 3.30 P.M.

THE fourteenth annual meeting of the Association for Promoting the Training and Supply of Midwives will be held, by permission of Mrs. Mackinnon, at 10, Hyde Park-gardens, W., on Thursday next, March 20th, at 3 P.M., when the chair will be taken by Her Royal Highness Princess Christian.

ROYAL INSTITUTION.—Next Tuesday, March 18th, at 3 o'clock, Professor A. Keith will deliver the first of a course of four lectures at the Royal Institution on "British Ethnology—the People of Scotland."

ROYAL MICROSCOPICAL SOCIETY.—At the meeting of the society to be held at 20, Hanover-square, London, W.1, on Wednesday, March 19th, at 8 P.M., Lieutenant-Colonel Clibborn, C.I.E., will read a paper on "A Standard Microscope," and opportunity will be provided for the exhibition of new models and designs. The lecture-room will be available from 7 P.M. for the display of such exhibits by Fellows of the society, by manufacturers, and by others wishing to take part.

URBAN VITAL STATISTICS.

(Week ended March 8th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 35·7 per 1000 in each of the two preceding weeks, fell to 31·9 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 26·6, or 5·8 per 1000 below that recorded in the previous week; among the remaining towns the rates ranged from 11·6 in Acton, 11·8 in Gillingham, and 12·6 in Edmonton, to 53·8 in Great Yarmouth, 54·5 in Wakefield, 58·3 in Bury, 60·7 in Blackburn, and 61·2 in Salford. The principal epidemic diseases caused 189 deaths, which corresponded to an annual rate of 0·6 per 1000, and included 48 from measles, 43 each from whooping-cough and diphtheria, 38 from infantile diarrhœa, 11 from scarlet fever, and 6 from enteric fever. Measles caused a death-rate of 1·6 in Sheffield, 3·1 in Middlesbrough, and 7·3 in Rotherham; and diphtheria of 1·5 in Tottenham. The deaths attributed to influenza, which had increased from 224 to 3889 in the six preceding weeks, declined to 3218, and included 597 in London, 210 in Manchester, 149 in Liverpool, 134 in Birmingham, 119 in Salford, 106 in Bradford, and 96 in Leeds. There were 6 cases of small-pox, 1062 of scarlet fever, and 1182 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 0, 1095, and 1172 at the end of the previous week. The causes of 75 deaths in the 96 towns were uncertified, of which 14 were registered in Liverpool, 10 in Birmingham, 8 in Manchester, and 5 each in South Shields and Gateshead.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had increased from 17·0 to 40·0 in the seven preceding weeks, fell to 34·5 per 1000. The deaths from influenza numbered 62, while in 450 deaths classified as due to other conditions influenza was a contributory cause; in the previous week these numbers were 78 and 618 respectively. The 920 deaths in Glasgow corresponded to an annual rate of 42·9 per 1000, and included 38 from whooping-cough, 9 from measles, 4 each from diphtheria and infantile diarrhœa, and 1 from enteric fever. The 180 deaths in Edinburgh were equal to a rate of 27·3 per 1000, and included 11 from whooping-cough, and 1 each from measles and diphtheria.

Irish Towns (Week ended March 1st).—The 466 deaths in Dublin corresponded to an annual rate of 60·0, or 14·8 per 1000 above that recorded in the previous week, and included 153 from influenza, 4 from infantile diarrhœa, 2 from measles, and 1 from whooping-cough. The 238 deaths in Belfast were equal to a rate of 30·9 per 1000, and included a fatal case each of whooping-cough, diphtheria, and infantile diarrhœa. (Week ended March 8th.)—The 489 deaths in Dublin corresponded to an annual rate of 63·0, or 3·0 per 1000 above that recorded in the previous week, and included 148 from influenza, 3 from measles, 2 from whooping-cough, and 1 from infantile diarrhœa. The 233 deaths in Belfast were equal to a rate of 30·3 per 1000, and included a fatal case each of whooping-cough and diphtheria.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg.-Lieut. J. A. Stirling, who was invalided on account of ill-health contracted in the Service, to retain rank.

ARMY MEDICAL SERVICE.

Col. H. D. Rowan is placed on retired pay.

Col. H. C. Thurston retires on retired pay.

Temp. Col. L. S. Dudgeon relinquishes his commission and retains the rank of Colonel.

The undermentioned temporary Lieutenant-Colonels to be temporary Colonels: H. Wade (Capt., R.A.M.C., T.F.), C. C. Choyce.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. D. E. Curme retires on retired pay.

Major (acting Lieut.-Col.) E. L. Moss to be acting Colonel whilst specially employed as Assistant Director of Medical Services.

The undermentioned relinquish the acting rank of Lieutenant-Colonel on re-posting: Major and Bt. Lieut.-Col. P. Davidson and C. R. Sylvester-Bradley; Major F. A. Stephens; Temp. Major R. A. Chartres; Capts. E. C. Lambkin, J. G. Gill, W. J. Tobin.

To be acting Lieutenant-Colonels whilst in command of a Medical Unit: Majors R. G. Ffrench, S. E. Lewis; Capt. (acting Major) J. R. Hill.

The undermentioned relinquish the acting rank of Major on re-posting: Capts. A. R. Wright, H. F. Joynt, A. E. Richmond; Temp. Capts. G. D. Mathewson, S. B. B. Campbell, J. B. Haycraft, A. G. Hamilton, J. Hendry, J. W. Elliott, A. Leeming, C. H. S. Webb, A. L. Saunders, J. W. Dew, W. R. P. McNeight.

To be acting Majors.—Capt. R. C. Lambkin, Temp. Capts. R. MacDonald, R. L. Crabb, J. C. Robb, F. W. Diamond, G. C. Adeney, A. Gray, A. T. Todd, C. F. Strange, W. K. A. Richards, A. G. Gilchrist, J. A. Currell, C. L. Forde, V. D. C. Wakeford, J. Buchanan, R. S. Barker, F. G. Ralphs, D. G. Wishart, E. E. Culpp, P. K. McCowan.

Temp. Major F. E. Watts, Can. A.M.C., to be acting Lieut.-Col. while employed at a Canadian General Hospital.

Temp. Capt. B. Hogan relinquishes the acting rank of Major on re posting.

Capts. J. M. MacKenzie and J. E. Hepper, to be acting Majors whilst specially employed.

Capt. R. G. Shaw to be acting Major.

A. Griffiths, late temp. Capt. (acting Major) is granted the rank of Major.

B. H. Shaw, late temp. Capt., is granted the rank of Captain.

Lieutenants (temp. Capts.) to be Captains.—O. D. Jarvis, J. La F. Lauder (acting Major) (to retain his acting rank), T. H. Sarsfield, J. A. Binning, J. F. Bourke (acting Major) (to retain his acting rank), J. E. Rusby.

Temp. Lieutenants to be temp. Captains.—W. W. Pearce, F. O. Stedman, J. H. Whiteside, G. R. Wilson, W. Robertson, O. Weinman.

A. Whitley, late temp. Captain is granted the rank of Captain.

Officers relinquishing their commissions:—Temporary Lieutenant-Colonels retaining the rank of Lieutenant-Colonel: A. Stewart, H. B. G. Newham; Maj. M. C. Wethered, Temp. Maj. (acting Lieut.-Col.) H. MacCormac (retains the rank of Lieutenant Colonel); Temp. Majs. F. S. Langmead, F. C. Hart-Smith, and E. Black (retain the rank of Major). Retaining the rank of Major: Temp. Capts. (acting Majors) G. Buchanan, J. P. Cahir, F. C. Greig, Temp. Hon. Major C. McNeil (retains honorary rank), D. W. Torrance, Temp. Hon. Maj. R. F. Kennedy (retains honorary rank); Temp. Capts. (retaining the rank of Captain) F. W. Bartlett, A. H. John, V. J. Batteson, J. A. Marsden, D. G. MacArthur, M. H. Pearson, W. B. Walker, H. H. Carter, R. C. Begg, H. H. Stiff, S. H. Nathan, R. S. Scott, S. Brée, S. R. Mackenzie, F. G. Chandler, G. H. Wilkinson, A. W. S. Sichel, J. H. Addinsell, J. B. Alexander, R. L. Rea, J. Hogg, R. M. Hewitt, H. C. Fox, T. J. Kelly, D. F. Curran, T. Tierney, J. R. Williamson, J. Tate, G. P. Barff, H. H. V. Welch, A. J. L. Speechly, W. S. Lindsay, C. P. Symonds, H. C. Mulholland, J. R. Magee, C. F. Nicholas, G. Y. Caldwell, H. U. Leembruggen, A. E. Fiddian, G. W. Huggins, M. S. Fraser, D. M. Hunter, J. H. Wilkinson, E. L. Councell, W. A. Ress, W. A. Anderson, H. Yellowlees, D. Haig, C. E. Redman, C. M. Willmott, I. M. Rdis, J. Elliott, H. A. R. E. Unwin, L. S. Davison, C. B. Goulden, C. R. Reckitt, N. Glegg, B. Kelly, V. L. Connolly, A. L. Vaughan, C. S. Thomson, A. S. Wilson, F. A. Anderson, W. F. Erskine, M. J. Johnston, R. D. Bridger, C. Butler, Temp. Capt. J. E. Briscoe, Temp. Hon. Capts. S. Wicks, G. S. Peppers, D. H. D. Cran (and retain the honorary rank of Captain), Temp. Hon. Lieut. C. E. Fearn (granted honorary rank of Captain), Temp. Lieuts. retaining rank of Lieutenant: J. G. Glasgow, B. H. Stewart, J. Clarke, C. Edwards, R. H. Watt, R. Theron, A. S. Ransome, G. C. Maguire, A. L. Sutherland.

SPECIAL RESERVE OF OFFICERS.

Captains relinquishing the acting rank of Major on re-posting: C. V. Nicoll, T. O. Graham, J. C. Brash, G. V. Stockdale, G. G. Jack, H. D. Rollinson, W. Murdock.

Captains to be acting Majors: L. J. Sheil, C. S. Staddon, D. Colombos, W. Broughton-Alcock, S. W. Lund.

Capts. H. F. Lamb, C. L. Gaussen, S. A. Lane relinquish their commissions and retain the rank of Captain.

Lieutenants to be Captains: W. P. Nelson, R. H. Chadwick, J. G. McCann, A. F. M. Fuoss, G. E. MacAlevey, I. H. Zortman, C. S. Parker, R. B. Britton, H. E. Rhodes, A. S. Westmorland.

To be Lieutenants: W. B. Watson (from Edinburgh University Contingent, O.T.C.), L. H. Bartram.

TERRITORIAL FORCE.

Major C. R. Laurie relinquishes his commission and retains the rank of Major.

Major H. A. Lesbody to be an Assistant Director of Medical Services and to be acting Colonel whilst so employed.

Capt. (acting Major) F. J. Green to be Major.

Capt. (acting Lieut.-Col.) H. F. Humphreys relinquishes his acting rank on ceasing to be specially employed.

Capt. (acting Major) H. G. W. Dawson is granted the pay and allowances of his acting rank whilst holding the appointment of Deputy Assistant Director of Medical Services.

Capts. (acting Majors) D. C. L. Fitzwilliams, G. H. Dominy, H. Henry to be acting Lieutenant-Colonels whilst specially employed.

Capt. M. G. Foster to be Major.

Capts (acting Majors) E. L. Martin and R. C. Clarke relinquish their acting rank on ceasing to be specially employed.

To be acting Majors whilst specially employed: Capt. A. M. Jones, Capt. P. J. Smyth.

Capt. B. Smeed relinquishes his commission and retains the rank of Captain.

1st London General Hospital: Lieut.-Col. Sir A. E. Garrod is restored to the establishment.

1st London Sanitary Company: Capt. (acting Major) F. E. W. Rogers relinquishes his acting rank on ceasing to be specially employed. Lieut. R. W. Brearey to be Captain.

2nd London Sanitary Company: Capt. A. G. G. Thompson to be a Deputy Assistant Director of Medical Services, and to be acting Major whilst so employed.

Capt. D. Smith is now seconded whilst employed as Education Officer.

TERRITORIAL FORCE RESERVE.

Capt. J. Derham-Reid, from Welsh Border Mounted Brigade Field Ambulance, to be Captain.

Capt. T. H. Peyton, from 1st Home Counties Field Ambulance, to be Captain.

ROYAL AIR FORCE.

Medical Branch.—Lieut. Oscar Hilton is transferred to Unemployed List.

Dental Branch.—Capt. G. Dawson is transferred to Unemployed List.

INDIAN MEDICAL SERVICE.

Majors to be Lieutenant-Colonels: J. C. H. Leicester, H. Innes, W. S. Willmore, A. E. Walter, C. Hudson, L. T. R. Hutchinson, A. M. Fleming, E. L. Ward, J. N. Walker, V. H. Roberts, T. S. Ross, W. MacM. Pearson.

Captains to be Majors: O. A. R. Berkeley-Hill, W. L. Harnett, J. D. Sandes, A. H. Napier, A. E. Grisewood, D. L. Graham, R. B. Nicholson, J. A. Cruickshank, J. A. S. Phillips (Bt. Major), P. M. Rennie, H. M. Inman, E. B. Munro, F. O'D. Fawcett.

The King has approved the retirement, with the grant of honorary rank, of Lieut.-Col. A. R. S. Anderson.

The services of Major J. R. J. Tyrrell have been replaced at the disposal of the Government of India for employment in the Foreign and Political Department.—The services of Lieut.-Col. D. C. Kemp have been placed at the disposal of the Madras Government.—Major R. E. Lloyd has been appointed Civil Surgeon of Serampore.—Lieut.-Col. J. G. Hulbert (retired), Civil Surgeon, has been transferred from Fyzabad to Gonda; Lieut.-Col. Z. A. Ahmed (retired), Civil Surgeon, from Gonda to Bahraich.—Lieut.-Col. R. G. Turner, whose services have been placed by the Government of India, Army Department, at the disposal of this Government, has been appointed Civil Surgeon, Fyzabad.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ALLAN, J., M.D., M.C. Edin., has been appointed Medical Officer to the Exeter Dispensary.

BRASH, E. J. Y., B.A., M.B., B.C. Cantab., Medical Officer to the Exeter Dispensary.

COOMBE, R., F.R.C.S., Honorary Consulting Surgeon to the Exeter Dispensary.

ELLISTON, C. R., M.D., Ch.B. Edin., Medical Officer and Public Vaccinator for the Sithney District by the Helston (Cornwall) Board of Guardians.

HUTT, C. W., M.D., B.C. Camb., Whole-time Medical and School Medical Officer for Dudley.

LOOSELY, A., B.M., B.Ch. Oxon., Assistant Surgeon in the Ophthalmic Out-patient Department at the London Temperance Hospital.

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal Mineral Water Hospital.—Res. M.O.

Bermondsey Parish Infirmary, Lower-road, Rotherhithe, S.E.—Med. Supt. £550.

Birmingham University Faculty of Medicine.—Asst. Prof. of Anatomy. £500.

Bodmin, Cornwall County Asylum.—Jun. Asst. M.O. £300.

Brighton, Royal Sussex County Hospital.—H.P. £100.

Buxton, Derbyshire, Devonshire Hospital.—Asst. H.S. £120.

Cardiff, King Edward VII.'s Hospital.—H.S. £200.

Carlisle, Cumberland Infirmary.—H.S. and H.P. £250.

Carlisle, Cumberland and Westmorland Asylum, Garlands.—Jun. Asst. M.O. £300.

Coventry and Warwickshire Hospital.—Res. H.P. £250.

Croydon County Borough, Cheam Tuberculosis Sanatorium.—Res. M.O. £400.

Derbyshire Hospital for Sick Children.—Female Res. M.O. £150.

East African Medical Appointments.—M.O. £400–£20–£500.

Federated Malay States Government.—Seven M.O., Grade II., and Three Female M.O. £350.

Glenties Union (Ireland). Doocharry Dispensary District.—M.O. £100.

Gloucester County Borough.—Asst. School M.O. and Asst M.O.H. £400.

Greenock Corporation.—M.O.H. £700.

Hampshire County Council.—Temp. Asst. M.O.H. £400.

Hospital for Sick Children, Great Ormond-street, W.C.—P. Also H.S. £50. Also Cas. M.O. £200.

Liverpool City.—M.O. for Police Force. £750.

Liverpool, Royal Southern Hospital.—Res. P. and S. Also Non-res. Cas. O.

London Lock Hospital and Rescue Home, Harrow-road, W., and 91 Dean-street, W.—Hon. Surg. to Out-patients.

Manchester, Ancoats Hospital.—M.O. £25.

Manchester, Baguley Sanatorium for Tuberculosis.—First and Second Asst. M.O. £400 and £350.

Manchester Royal Eye Hospital.—Jun. H.S. £120.

Manchester Royal Infirmary Convalescent Hospital, Cheadle.—Res. M.O. £300.

Middlesex County Council.—Tuberc. M.O. £600.

Newcastle-on-Tyne Dispensary.—Res. M.O. £300.

Newcastle-on-Tyne, Hospital for Sick Children.—Res. M.O. £200.

Northampton General Hospital.—H.S. £200.

Norwich, Norfolk and Norwich Hospital.—H.S. £200.

Preston, County Asylum, Whittingham.—L.T. 7 gs. per week.

Prince of Wales's General Hospital, Tottenham, London, N.—Hon. Asst. P. in Out-patients' Dept. Also Sen. H.P. and Sen. H.S. £200. Also Jun. H.P. and Jun. H.S. £120.

Ramsgate Borough.—M.O. and School M.O. £500.

Rhondda Urban District Council.—Asst. School M.O. and M.O.H. £400. Also Dent. S. £350.

Royal Free Hospital, Marlborough Maternity Section, Gray's Inn-road, W.C.—Female Res. M.O. £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Refrac. Asst. £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £250.

Salford County Borough.—M.O. for Maternity and Child Welfare. £400.

Scarborough Hospital and Dispensary.—Two H.S.

Serbia, Hospital in.—Surg.

Shanghai Municipal Council Health Department.—Asst. Health Officer. £900.

Sheffield Royal Hospital.—Cas. O. £130.

Sheffield Royal Infirmary.—Cas. Officer Also Oph. H.S. £150.

Southampton, Free Eye Hospital.—H.S. £150.

Stafford, Staffordshire County Mental Hospital.—Sec. Asst. M.O. £300.

Staffordshire Education Committee.—Female Asst. M. Inspectors. £400.

Stroud General Hospital.—H.S. £250.

Swansea General and Eye Hospital.—Res. H.P. £200. Also Sen. Student. £120.

Tiverton Hospital, Devon.—H.S. and Dispenser. £100.

Tunbridge Wells General Hospital.—Two H.S.

Union of South Africa Mental Hospital Service.—Six Asst. Phys. £380.

Wakefield, West Riding Asylum.—L.T. 7 guineas per week.

Wallasey County Borough.—Tuberc. O. and Asst. M.O.H. £500.

West Riding of the County of York.—District Tuberc. O. £500.

Whitehaven and West Cumberland Infirmary.—Res. H.S. £180.

Wolverhampton and Staffordshire General Hospital.—Two H.S. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Harwich, Nantgaredig, and at Bridgnorth, in the county of Salop.

Births, Marriages, and Deaths.

BIRTHS.

HEARN.—On March 4th, at Goldhurst-terrace, South Hampstead, the wife of R. H. Hearn, M.B. Cantab., Captain, R.A.F., of a daughter.

HODGES.—On March 6th, at the Woodlands, Bishop's Stortford, the wife of Arthur Noel Hodges, M.B. Cantab., Captain, R.A.M.C., of a son.

MARRIAGES.

AITKEN—GARRETT-SMITH.—On March 6th, at Saint Columba's (Church of Scotland), Pont-street, S.W., David McCrae Aitken, F.R.C.S., temporary Captain, R.A.M.C., to Alice Garrett-Smith, only daughter of the late Godfrey Garrett-Smith, and Mrs. Garrett-Smith, of Roehampton.

PRICE-HARRIS—TWEMLOW-COOKE.—On March 4th, at Parish Church, Sidmouth, Major L. Price Harris, M.C., R.A.M.C.T., to Amy Victoria Mary, only daughter of the late Rev. D. J. Twemlow-Cooke, M.A. Cantab., and Mrs. Twemlow-Cooke, of Sidmouth.

SHIELD—MAESEN.—On March 1st, at Condamine-Chatelard, Basses-Alpes, France, Major Hubert Shield, M.C., R.A.M.C., T.F., 1st Northumbrian Field Ambulance, to Léontine, daughter of M. le Capitaine H. Maesen, Croix de Guerre, of Condamine-Chatelard, Basses-Alpes, France.

TAYLOR—BURKE.—On March 3rd, William Alfred Taylor, B.A., M.B., B.Ch., medical officer, Straits Settlements Medical Service, to Constance, widow of Captain Bernard Burke, Grenadier Guards.

DEATHS.

COLDSTREAM.—On Feb. 26th, at Florence, Alexander Robert Coldstream, M.D., F.R.C.S.E., in his 67th year.

HARTLEY.—On March 5th, at De Parys-avenue, Bedford, Arthur Conning Hartley, T.D., M.D., C.M., F.R.C.S., aged 54 years.

POLLOCK.—On March 7th, at Penton Lodge, Mill Hill-park, W., Rowland Pollock, L.R.C.P.I., L.M., L.R.C.S.I.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE examinations for the Diploma in Psychological Medicine are now being resumed by the University of Cambridge. It is the aim of the managing committee for this diploma to make its acquirement a habit among psychiatrists in the same way as a public health diploma is part of the equipment of the sanitarian.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.1.

Tuesday, March 18th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

Wednesday, March 19th.

SOCIAL EVENING: at 8.30 P.M.
Mr. Walter G. Spencer will discourse on "Larrey and War Surgery."

MEETINGS OF SECTIONS.

Wednesday, March 19th.

HISTORY OF MEDICINE (Hon. Secretaries—Charles Singer, Arnold Chaplin): at 5 P.M.
Papers:
Dr. Ralph Leftwich: The Evidence of Disease in Shakespeare's Handwriting.
Rev. Father Fletcher: The Medical Book of St. Isidore.

Thursday, March 20th.

DERMATOLOGY (Hon. Secretary—S. E. Dore): at 4.30 P.M.
Cases:
Dr. Graham Little: (1) Multiple Neuromata of Skin; (2) Dercum's Disease; (3) ? Section of Mycosis Fungoides.
Dr. Barber: (1) Case for Diagnosis; (2) Granulosis Rubra Nasi; (3) Alopecia of the Scalp and Eyebrows associated with Graves' Disease.
Dr. George Pernet: (1) Arrested Development of Hair in a Girl; (2) Unilateral Band Sclerodermia; (3) Melanotic Nævo-carcinoma (previously shown).
Dr. S. E. Dore: Case for Diagnosis.

Friday, March 21st.

OTOLOGY (Hon. Secretaries—J. F. O'Malley, H. Buckland Jones): at 5 P.M.
Demonstration:
Sir Thomas Wrightson, Bart., and Prof. Arthur Keith: Demonstration on the New Theory of Hearing.
Specimens and cases will be shown by:—
Mr. Sydney Scott, Mr. Richard Lake, Mr. Stuart-Low, Dr. Watson Williams, Mr. Lawson Whale, and Mr. O'Malley.

ELECTRO-THERAPEUTICS (Hon. Secretaries—Robert T. Knox, Walter J. Turrell): at 8 P.M.
JOINT MEETING with the INSTITUTION OF ELECTRICAL ENGINEERS.
The *Discussion* will be opened by papers by Mr. R. S. Whipple on "Some Notes of Electrical Methods of Measuring Body Temperature," and "Some Notes on the Electrocardiograph."
In addition there will be an Exhibition of X-Ray and Electro-therapeutic Apparatus.
Advance copies of the papers will be ready a few days before the meeting, and will be sent on application to the Secretary, Institution of Electrical Engineers, 1, Albemarle-street, W.1.

The Royal Society of Medicine keeps open house for R.A.M.C. men and M.O.'s of the Dominions and Allies. The principal hospitals in the metropolis admit medical officers to their operations, lectures, &c. Particulars on application to the Secretary at 1, Wimpole-street, London, W.1.

ROYAL METEOROLOGICAL SOCIETY, at the Lecture Room of the Geological Society, Burlington House, Piccadilly, W.
WEDNESDAY, March 19th.—5 P.M., Lecture:—Prof. L. Hill: Atmospheric Conditions which Affect Health.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.1.
WEDNESDAY, March 19th.—8 P.M., Dr. J. B. Gatenby: An Account of Work on Cytoplasmic Inclusions of the Cell.—Lieut.-Col. J. Clibborn, C.I.E.: A Standard Microscope.—Dr. N. Mutch: A Simple Method for the Isolation of Single Bacteria for the Preparation of Pure Cultures (Demonstration).

CHILD-STUDY SOCIETY LONDON, at the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.
THURSDAY, March 20th.—6 P.M., Discussion on Training of the School Girl in Infant Care (opened by Mrs. K. Truelove).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
TUESDAY, March 18th, AND THURSDAY.—5 P.M., Milroy Lectures:—Dr. J. C. McVail: Half a Century of Small-Pox and Vaccination.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
Special Eight Weeks' Course of Post-Graduate Instruction. (Details of the Course were given in our issue of Feb. 15th).

LONDON HOSPITAL MEDICAL COLLEGE.
A Special Course of Instruction in the Surgical Dyspepsias will be given at the Hospital by Mr. A. J. Walton. Lectures, given in the Clinical Theatre:—
MONDAY, March 17th.—1 P.M., Lecture VII.:—Gastric Ulcer; Ætiology and Pathology.
FRIDAY.—10 A.M., Lecture VIII.:—Gastric Ulcer; Symptoms, General and Special.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON), Governors' Hall, St. Thomas's Hospital, S.E.
A Series of Ten Lectures on Diseases met with in the Sub-tropical War Areas (illustrated with lantern slides, charts, diagrams and microscopical preparations).
WEDNESDAY, March 19th.—5 P.M., Lecture V.: Dr. L. S. Dudgeon: Blackwater Fever.
FRIDAY.—5 P.M., Lecture VI.:—Dr. L. S. Dudgeon: Bacillary and Amœbic Dysentery.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY, March 18th.—3 P.M., Lecture II.:—Prof. A. Keith: British Ethnology—The People of Scotland.
FRIDAY.—5.30 P.M., Prof. W. W. Watts: Fossil Landscapes.

Notes, Short Comments, and Answers to Correspondents.

A PICTORIAL SYMBOLISM OF REPRODUCTION.

THE puerile and primitive anthropomorphic attempts of the ancients to explain the origin and continuity of vegetable, animal, and human life in pre-Christian times are well known. The common concepts of a divine fusion of both sexes led, in Mesopotamian and in much of Hellenic mythology, to a pandemonium of eroticism and stories of impossible intercourse. When, as in Syria, and perhaps in some of the tableaux of the Greek mystery plays, the sexual subject of generation was mingled with religion gross indecencies were suggested and practised—in some Egyptian myths mankind was said to have been created from the spittle of Osiris, whilst in others it was accomplished by his masturbation. Isis also was said to have filled up again the depopulated Delta by a similar process.

The reproductive element in life was a mystery to these early races, although they knew sufficient about the sexual fertilisation of plants to take the male date palm pollen and shower it over the female flowers. But alongside much crude imaginings there was a somewhat better-thought-out and reasonable speculation as to the reproduction of life based on the knowledge then available. This explanation appears only to have been accepted by the Phœnicians, racially close allies of the Hebrews, and is to be found in fragmentary excerpts from Sanchuniathon and other Semitic sages.

It has been difficult clearly to comprehend the interpretation of reproduction which the wise Phœnicians professed to give, as we have only Greek translations of their writings; but a vivid light has been thrown upon what they intended to convey—and it confirms the

renderings the classics had given—by the discovery in Spain of a Phœnician picture, or tableau, setting forth their view pictorially. This relic forms the major part of a circular plaque, showing the sun, and stars at top, with a border of fish figures, indicating that the whole design depicts the Cosmos surrounded by water. Prominent in the foreground are two palm trees, male and female, and two serpents, the horned male beside the staminate male tree and the female snake with teats and bird wings near the pistillate palm. The heat of the earth is represented by a flame rising in the foreground, the solar heat being typified by the rayed sundisk. By this description it is clear that the tableau concerns nature's reproductive forces, the serpents being selected because of their reputation for copulative powers, the trees to illustrate the vegetable kingdom, and the solar heat and warmth of the soil as productive of vegetation. This knowledge guides us to the correct interpretation of the two central figures completing the picture, which are two deities of human form, the feminine form beside the female animal and tree, and the male one opposite. They are represented as producing life, both bodily and spiritual, from two sources of their

persons. The sperm from the male body, whom we may call Baal—if this is really Phœnician work—passes from him and enters and leaves again Tanith's body, flowing with a spiral motion, terminating in a figure of a human embryo. This spiral fluid is made up of animal corpuscles, and is nourished by a stream of milk flowing from Tanith's breasts. Her body is decently clothed in a skirt with zones of various figures, as we know was the case with Diana's robe at Ephesus. But a further form of vital interaction is represented by flying bodies passing between the open mouths of the two figures. These are alternately tiny winged creatures and circular objects, and evidently refer to the creation of the soul. The primitive words for breath and for the spirit were frequently the same, and the emblems for the soul often a butterfly, or some small winged creature. Archæological evidence for the widespread prevalence of these concepts is forthcoming.

PHYSIOLOGY AND THE STUDY OF DISEASES.

AT King's College, London, on March 5th, Professor D. Noel Paton delivered a lecture on Physiology and the Study of Diseases, being the fifth of the series of lectures on Physiology and National Needs. Physiology, he said, was the basis of the study of disease, for disease was simply normal physiological action gone wrong. It was the duty of the physician to discover what the fault was and why it had occurred. Until he had investigated these two points any rational treatment was hopeless. To study disease without this constant reference to normal physiological conditions was one of the greatest mistakes which had been made in the past. There was a tendency to group symptoms together without an adequate consideration of their significance in terms of normal physiological action, or of their mode of production. It followed as a result that too often treatment was based upon the authority of others without considering how the patient would be benefited. This opened the door to credulity and credulity ought not to enter into medicine. It was hardly realised how empirical medical treatment was even at the present day. It was impossible to cure disease when structural changes had developed. Slight divergences from the normal physiological action, resulting in the first stages of real disease, were too often ignored. The naming of diseases had perhaps obstructed advance in medicine. If a child's head were enlarged by an accumulation of fluid some might be content with a diagnosis of hydrocephalus without considering why the fluid was there. The student too often studied physiology as a means of passing certain examinations rather than as a preparation for the study of disease. He required to be shown how scientific methods could be carried into practice at the bedside. For example, physiological methods had been applied to the study of disease, in the investigations which had been carried out on gassing and wound shock, and on tetany, in which the action of the parathyroid glands was involved. There was a strong tendency at present to place utility in the forefront, but experience had shown that the most important advances in the application of science to medicine had been based upon investigations which primarily seemed to have no direct bearing on benefits to humanity. A knowledge of osmotic pressure, viscosity, and colloids, which had been studied without any reference to remedial measures, had proved of great value in initiating various forms of treatment. The real scientist found his greatest joy in overcoming difficulties. The general public must realise that knowledge gave us power to fight with more success against the adverse forces of life, and that consequently facilities should be given to those who sought to obtain knowledge.

> "Ignorance is the curse of God,
> Knowledge the wing wherewith we fly to heaven."

Sir George Newman, who presided, considered the neglect of physiology in our schools and colleges throughout the country to be one of the principal causes of the large amount of disease and disablement which was found among the school children of England and Wales. The fact that 10 per cent. of them were suffering from an avoidable degree of malnutrition which prevented them from taking full advantage of their educational facilities, and that about 20 to 30 per cent. failed to see with their eyes what they might see if the teachings of physiology had been understood, showed the enormous loss to the country which resulted from a failure to put physiological laws into practice. A study of fatigue and disablement had shown that the same neglect of adolescent and adult life had led to a reduction of output in munition factories at the maximum cost to the life and strength of the worker. Wages and social conditions were important, but it was still more the right understanding and right practice of the principles of physiology which secured a maximum output. We had established in England, he said, a great school of physiology, but it was one of the defects of English medicine that we failed to carry the principles discovered and taught into the daily practice of medicine at the bedside and in the ward. Until English physiology entered into its kingdom in English medicine we should not reap the full harvest which was ours by right as the result of the work of English physiologists. In his Government work he had met precisely the same problems. In the schools, the workshops, and the universities we were in greater need of a right understanding and right practice of the principles of physiology than of almost anything else.

SPHAGNUM MOSS.

THE secretary of the Devon Sphagnum Moss Central Depôt reports that since the spring of 1915 up to the present time 830,520 moss dressings had been forwarded to 165 base hospitals, casualty clearing stations, &c.

OSTEO-ARTHRITIS.

To the Editor of THE LANCET.

SIR,—Can any of your readers suggest a remedy for a case of osteo-arthritis in right hip-joint of a practitioner aged 50 years, otherwise healthy? Teeth sound. Pain is not troublesome during the day, but is getting severe at night for the past month or so. Any suggestions as to treatment will be gratefully received.

I am, Sir, yours faithfully,
ARTHRITIS.

THE MOSQUITO PROBLEM IN BRITAIN.

THE possible danger from the importation of malaria in this country is emphasised by the Order of the Local Government Board making that disease notifiable, and the question arises as to how far the methods of fighting the anopheline mosquitoes adopted in the tropics are practicable in the British Isles. In the January issue of the *Royal Army Medical Corps Journal* Captain Allan C. Parsons and Lance-Corporal G. R. Brook, of the same corps, contribute a joint paper containing suggestions for a winter campaign in this country against the mosquito, pointing out that the conditions, political, physical, and social, existing at home in regard to the mosquito problem are altogether different from those of the tropics. Their method, based on the seasonal habits of mosquitoes, which they describe in detail, consists in catching or destroying the insect, some species of which pass the winter in the adult stage and some in the larval stage, by means of swatting, flares or blow-lamps, electrocution, and fumigation. Of these last-mentioned agents the general use of hydrocyanic acid, chloroform, and chlorine on a large scale is not recommended on account of the danger involved in their employment, though it is pointed out that chlorine is a very powerful insecticide and might be used with good results at small cost at stations where the services of gas officers are available. Where a safe domestic remedy is required the authors recommend campho-phenique and the various cresylic compounds.

THE FACTORY MEDICAL OFFICER IN WAR AND PEACE.

Dr. W. J. O'Donovan, chief medical officer of the Welfare and Health Section of the Ministry of Munitions, delivered a lecture at the Royal Institute of Public Health on March 5th on the War-time Experience of Factory Medical Officers and the Position of Factory Medicine under Peace Conditions. Lord Chetwynd, who presided, said that in a factory with which he was connected medical supervision had proved itself of benefit not only to the operators, but to the administrative side of the work, both the amount and quality of production being increased when the health and physical needs of the workers were properly attended to. Women workers, as a rule, did not feed themselves properly and, as a consequence, often suffered from fainting attacks; at one time in his factory as many as 50 to 60 cases would occur in a day, which meant the stoppage both of the patient's work and that of those who attended to her. When the women were properly fed fainting fits became rare. About 9000 people were employed, of whom 3000 were women, and for these a staff consisting of two doctors, one dentist, and four trained nurses was not too large. By keeping the workers cheerful, preventing monotony in their work, and by providing recreation and a complete change during meal-times, casualties were reduced enormously, the money saved on better production amply providing for such supervision.

Dr. O'Donovan said that the beginning of the war found the country unprepared to deal with the needs of industrial medicine, and the problem became acute when T.N.T. was first handled in bulk. Industrial health in this connexion was more important than the recognition and treatment of disease. The medical officer of the factory admitted the employees, selected those best suited for the work which was being carried on, and supervised all the working conditions. He was the friend and consultant of everyone within the factory gates, and often saved much anxiety by solving difficult problems which presented themselves to the management. Knowing the conditions under which the worker was

employed, the factory officer was in a position to understand the nature of the illnesses of workers better than could the outside doctor, who might quite easily be imposed upon by the patient, and where sick benefit was concerned he thus saved money to the country. It was necessary that he should be a member of the factory staff. Sickness among the workers might be caused by drink, industrial occupation, or illness, but before the occurrence of disease the effects of fatigue might make themselves felt, and this could only be properly dealt with by the factory officer who knew the conditions of work. It had been said that the lawyer took a broad outlook upon life, whilst the doctor was a pure individualist. If medicine was to progress the community must be regarded as a whole, and it was in industrial medicine that the medical profession would find its best recognition. In the future we should be guided by our war experiences, which showed that success could be assured by a combination of methods. There was a peripheral medical staff in each industrial area, a headquarters medical staff travelling from centre to centre, and a headquarters medical staff whose members could remain in any area over a long period when necessity arose. Every case of difficulty was carefully considered, whilst coördination of research had been most fruitful in its results. It was, however, important that the findings of research should be adapted to industrial conditions in the factory.

Factory medical officers, he continued, being disbanded, employment was passing from the State to private management, and the services of the certifying surgeon would again have to be relied upon; but his duties were so multifarious that any practical work on industrial conditions was impossible. Pathologists should be appointed whose main duty would be to inquire into industrial deaths, for if clinical industrial medicine was to be put on a sure foundation it must be supplemented by observation in the post-mortem room. Whilst there were chairs in all departments of medicine in our universities, there were none which had for their object the maintenance of industrial health, though there was an increasing demand for skilled industrial physicians. The factory doctor must be assisted by the factory nurse and the factory dentist. To a large extent health depended upon the state of the mouth, but the working hours of the registered dentist were never available to the working-class patient, the quack only being regularly a worker in the evening. For this reason facilities should be given for the employment of a factory dentist. The same applied to the doctor. As a rule the worker could only see the general practitioner either when he was ill in bed, or in the evening when both he and the doctor were tired, and the surgery was perhaps crowded. It should be the privilege of every worker to see his medical attendant in the daylight.

A SIMPLE AID IN REDUCING PARAPHIMOSIS.

To the Editor of THE LANCET.

SIR,—Paraphimosis, whether secondary to inflammatory changes in the adult or to manipulations in children, is common in general practice and very common in urogenital clinics, but when one looks up the literature as to the treatment of this painful condition all authors suggest a similar mode of procedure as to its reduction—namely, to grasp the œdematous portion of the penis between the index and middle fingers of both hands, making traction forwards, while the thumbs press the glans backwards. The process is painful, the operation often fails, especially in old-standing cases, and then operative measures are necessary.

By the simple means of puncturing the œdematous tissue, and so draining the waterlogged tissue, I have been successful in reducing the most severe cases practically painlessly. The skin is sterilised in the usual way or by painting with iodine; a few stabs are made in the swollen tissue with a needle sterilised by passing through the flame of a spirit lamp or bunsen burner. Gentle pressure is made and the œdematous fluid will ooze from the punctures. The prepuce can then be easily drawn over the shrunken tissues. I have never had any complications following, but the precaution must be taken to give the patient some antiseptic lotion to wash out the preputial sac.

If practitioners will adopt this simple plan I am certain very few cases will be seen in out patient departments of hospitals or in the private consulting-rooms of specialists.

I am, Sir, yours faithfully,

Manchester, Feb. 25th, 1919. M. W. BROWDY, M.B. Glasg.

F. H. M.—We presume that varix of the *common* femoral vein is referred to. Varix of deep veins is extremely rare, and we know of no recorded case of a dilated femoral vein being mistaken for femoral hernia. Varicosity of the *saphenous* vein as it passes through the saphenous opening is not rare and has been mistaken for femoral hernia. If it is desirable to interfere at all, the dilated portion of the saphenous vein may be tied and excised, asepsis being observed, and special care being taken while tying the smaller vessel at its point of entry into the larger to avoid the production of a thrombus protruding into the common femoral vein. Should varicosity of the *femoral* vein be present ligature should not be tried, as nearly all the blood from the lower limb returns by this vein, and its ligature would almost certainly be followed by great œdema of the leg and probably by gangrene. Nothing more can be done than to give the dilated vein the support of a bandage.

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B.—Mr. W. G. Ball, Lond.; British Medical Association, Marylebone Division; Miss L. M. Brooks, Lond.; Messrs. P. Blakiston's Son and Co., Philadelphia; Board of Agriculture and Fisheries, Lond.. Board of Agriculture and Ministry of Food, Joint Committee of, Lond.; Dr. A. C. Begg, Swansea; Dr. F. W. Broderick, Bournemouth.

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J. *Journal of Bacteriology*, Baltimore.

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